



Memorandum

To: Erin Aleman
From: CMAP staff
Date: August 1, 2023
Subject: Bus speed and reliability

Executive summary

The bus services offered by both the Chicago Transit Authority (CTA) and Pace Suburban Bus (Pace) are critical elements of the region's public transit system, connecting residents with opportunities, healthcare, friends, family, and more. The resilience of bus ridership during the pandemic highlighted the importance of investing in the region's buses, as well as the need to address rider requests for more frequent and reliable bus service.¹

Most CTA and Pace buses operate in the same traffic as other vehicles. Competing for space on these congested roads makes the bus less reliable and more expensive to operate, with significant equity implications for the transportation system. It also positions the bus at a competitive disadvantage compared to driving a personal vehicle. Despite some recent successes by both CTA and Pace, average bus speeds have slowed over the last two decades, and bus ridership has fallen from its peak levels in 2008.

There are significant opportunities to improve bus speed and reliability, enhancing mobility for those who depend on the bus while attracting new riders as well. But the region's transit agencies cannot overcome these challenges alone. To support better bus service throughout the region, the State of Illinois should consider the following recommendations:

- **Develop a regional bus priority plan and establish an interagency structure accountable for its implementation.** Transit agencies, regional planning agencies, local governments,

¹ Pace 2022 Customer Satisfaction Survey Results and CTA 2022 Customer Satisfaction Survey Results.

the Illinois Department of Transportation (IDOT), and the Illinois Tollway need to work together to plan and implement bus priority infrastructure. The state should require the creation of a regional plan for bus priority investments, including a regionally connected network of bus priority corridors, complementary changes to state roadway design manuals and performance measures, and requirements for state and local roadway agencies regarding the implementation of the bus priority plan. To ensure that the region makes regular progress toward implementing the bus priority plan, the state should also establish an interagency structure that can be held accountable for its implementation, such as a “Bus Priority Working Group.”

- **Dedicate funding to implement bus priority plan.** To support implementation, the state can create dedicated state funding for capital improvements. These funds can also be used to enable local match to unlock the historic levels of federal funding for transit investments currently available.
- **Build staff capacity at roadway agencies to support bus priority.** The state can facilitate progress by directing roadway agencies to hire dedicated transit staff, providing funding for those positions, and directing the agencies to work together on an ongoing basis toward measurable targets for bus improvements.
- **Enable automated camera enforcement for bus lanes and stops.** To improve bus speed and reliability, transit and roadway agencies need to be able to keep their bus lanes and stops clear of obstructions like traffic and parked vehicles. The state should grant transit providers and other government agencies (such as municipalities and counties) the power to issue citations for both standing and moving violations, including by using bus-mounted enforcement cameras.
- **Enable all-door boarding by authorizing on-board fare verification.** Transit operators can also speed the bus boarding process by allowing riders to board through either the front or rear door. To make this possible while maintaining fare revenue, the state should authorize regional transit providers to verify whether riders have paid their fares on board the vehicle and to issue citations for riders who have not paid their fare. This could be achieved by hiring non-sworn fare officers who could also serve as transit ambassadors.

The problem: slow bus speeds make the bus less reliable, less competitive, less equitable, and more expensive to operate

When buses get slower, it gets harder and more expensive to provide the service that the region wants – and deserves. Unreliability, or a service that a rider cannot depend on, makes bus trips a less competitive option for getting to places like work or appointments, and ultimately leads to fewer people using the service.

Riders have long asked for more frequent and reliable bus service. Customer surveys consistently show that high frequency service, which means shorter wait times, is a top priority for bus rider satisfaction, and an important consideration in making the bus an attractive option to customers.^{2 3} Both Pace and CTA customer satisfaction surveys show that frequency and reliability are among the lowest-rated characteristics of both CTA and Pace bus service. Riders also identify overall speed and travel time as a major issue. Reliability and frequency of service both influence a customer’s ability to confidently catch a bus within a reasonable time. These characteristics also influence the perceived safety of using transit, as waiting alone at bus stops can be seen as the most vulnerable portion of a trip (*See companion [memos](#) on the importance of bus frequency and on safety and security*).

In addition, as roadway congestion worsens, so do bus speeds and reliability. Buses are getting slower in the region, especially on the CTA system. Over the last 20 years, average bus speeds have slowed by 9 percent on CTA and by 4 percent on Pace, as shown in **Figure 1**. Congestion slows down buses considerably during “peak” travel periods, when many riders need to travel between work and home. An example of this is shown in **Figure 2** for the Halsted Street bus corridor between the CTA Red Line 95th/Dan Ryan station and Chicago city limits; run times during peak travel periods are up to 30 percent longer than during off-peak periods.

Besides making trips longer and less predictable, congestion and obstructed bus stops and bus lanes can also lead to “bus bunching,” the phenomenon of multiple buses arriving at a stop back-

What street conditions can contribute to bus delays?

Buses are typically delayed by traffic congestion caused by too many vehicles for the availability of road space and intersection capacity.

Additional factors that can make traffic congestion worse and sometimes disproportionately impact bus travel times and reliability include:

- Roadway bottlenecks, such as where two lanes narrow to one at a highway or rail overpass
- Non-compliance with traffic laws, especially double-parking, blocking bus stops, or “blocking-the-box” at signalized intersections
- Partial or full street closures due to construction or special events
- Crashes and related emergency response activities
- Obsolete signal technology and signal timing

Source: *Better Streets for Buses*

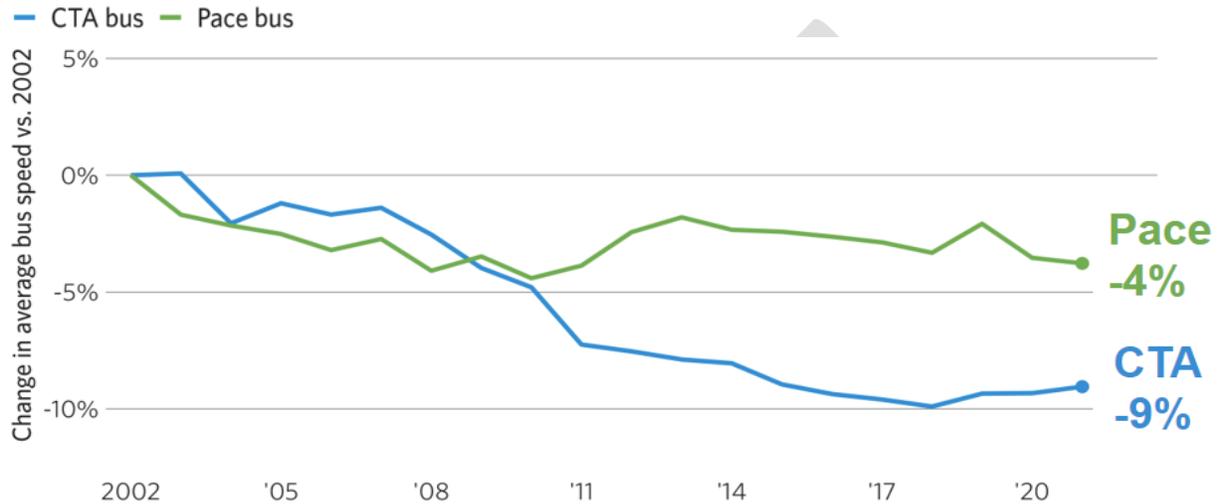
² CTA, Pace, and Metra customer satisfaction surveys: <https://www.rtachicago.org/region/how-system-working#Customer-Satisfaction-Surveys>

³ CTA and CDOT, Better Streets for Buses Plan Draft for Public Comment, 2022. <https://betterstreetsforbuses.com/8166/widgets/25905/documents/19568>

to-back after passengers have been forced to wait at a stop longer than scheduled.

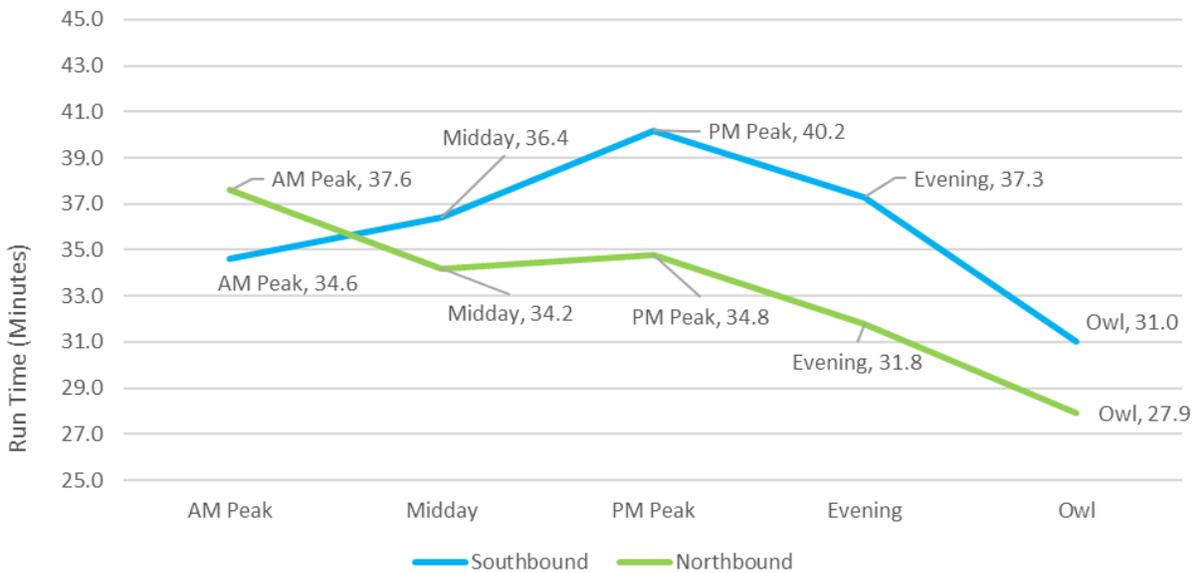
Over time, unreliability can push riders to consider driving instead. For those who do not or cannot opt to drive, deteriorating reliability impacts employment, childcare, and overall quality of life by forcing people to dedicate more of their time to traveling than otherwise necessary.

Figure 1: Bus speeds in the CMAP region, 2002-2021



Source: CMAP analysis of National Transit Database data

Figure 2: Halsted corridor bus run time by direction and travel period

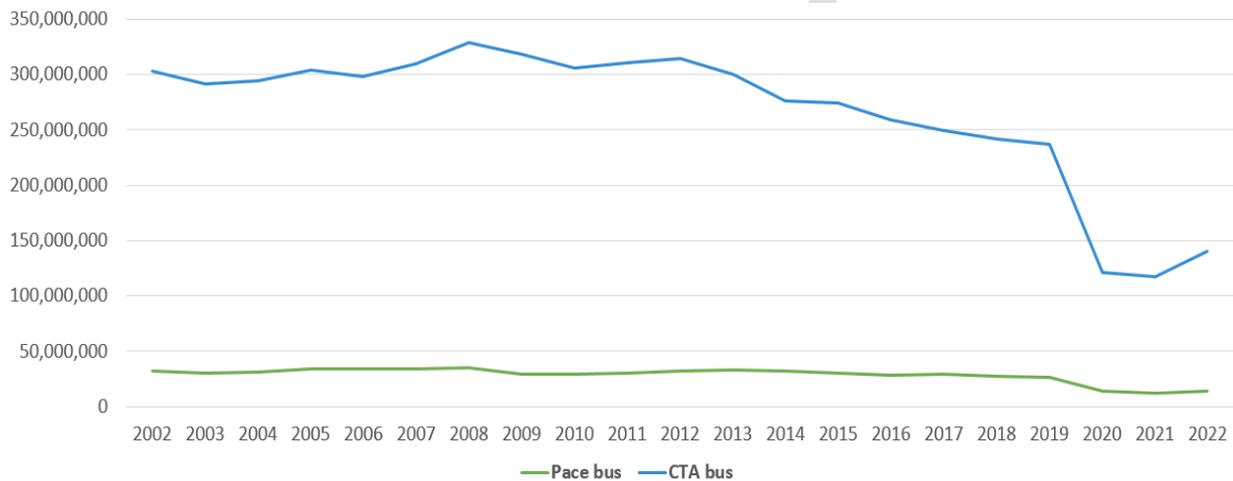


Source: HNTB analysis of CTA data from *South Halsted Bus Corridor Enhancement Project Existing Conditions, Needs, & Deficiencies Technical Memorandum*⁴ Table 4.13, p. 47.

⁴ CTA and Pace, Existing Conditions, Needs, & Deficiencies Technical Memorandum: South Halsted Bus Corridor Enhancement Project, 2018. <https://www.pacebus.com/sites/default/files/2020-12/South%20Halsted%20-%20ECND%20-%20202019-11-05%20%28Final%29.pdf>

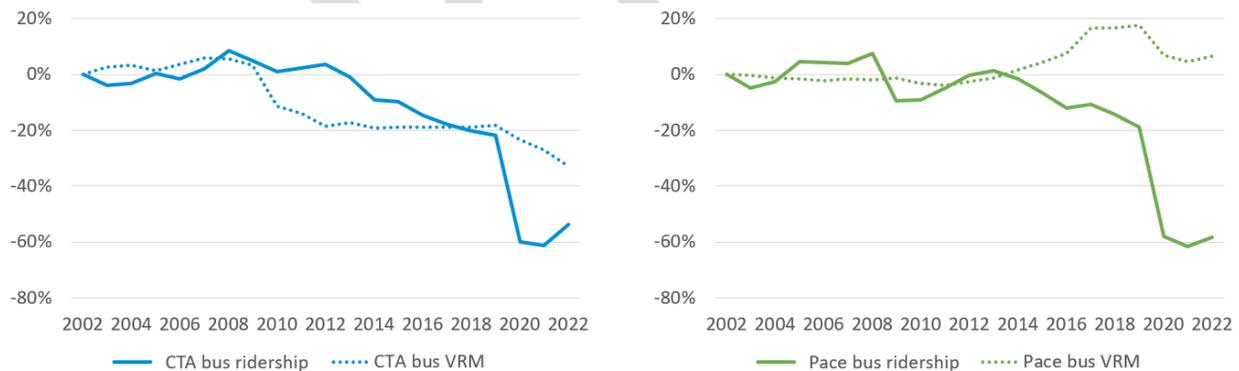
In addition to declining bus speeds, ridership has also fallen from its 2008 peak of nearly 330 million rides on CTA and 35 million rides on Pace, as seen in **Figure 3**. While COVID-19 led to a significant drop in ridership over the past few years, this downward trend emerged well before the pandemic. Starting in 2009, CTA began making service cuts below 2002 levels, resulting in a decline in vehicle revenue miles (VRM), as shown in **Figure 4**. Slower bus speeds increase the cost of operating service; improving bus speed and reliability would enable CTA and Pace to operate service more efficiently, allowing for more service at the same cost.

Figure 3: CTA and Pace annual bus ridership, 2002-2022



Source: CMAP analysis of National Transit Database data

Figure 4: CTA and Pace bus percent change in ridership and vehicle revenue miles, 2002-2022

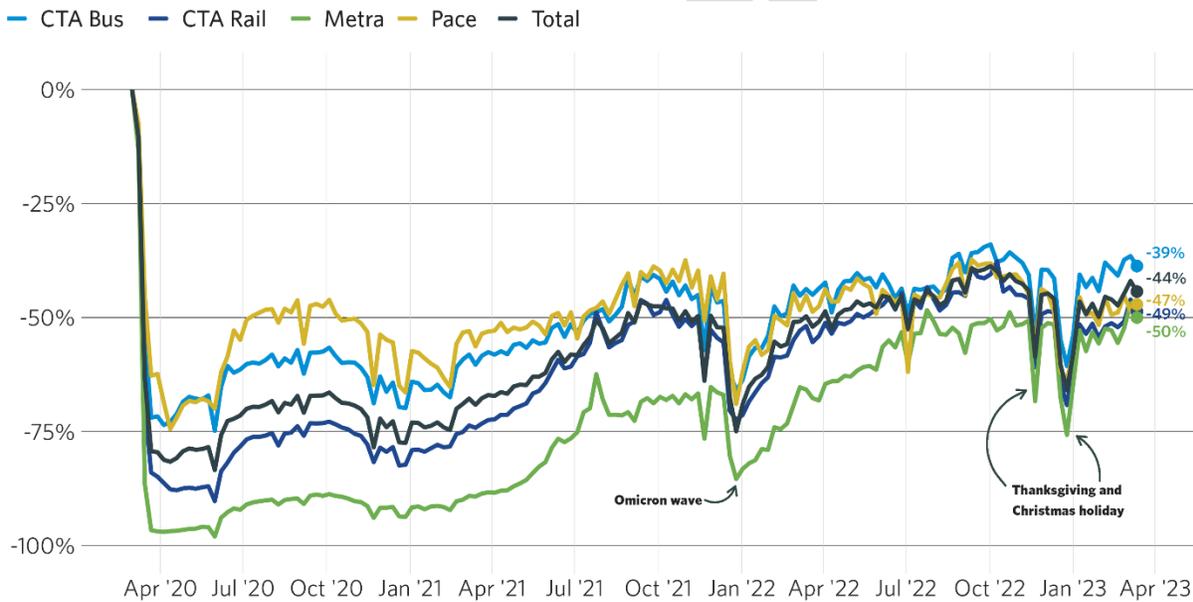


Source: CMAP analysis of National Transit Database data

When bus service is less effective, vulnerable populations are most impacted

COVID-19 has highlighted the critical role buses play in regional transit. During the pandemic, and still today, buses provided essential mobility to essential workers, those with no or limited access to a private vehicle, those whose health or mobility challenges prevent them from driving a personal vehicle, and other historically disadvantaged and vulnerable communities. Bus service showed its resilience by maintaining the highest ridership of all transit modes during the pandemic, as shown in **Figure 5**.

Figure 5: Decline in weekly transit ridership, March 2020 - December 2022

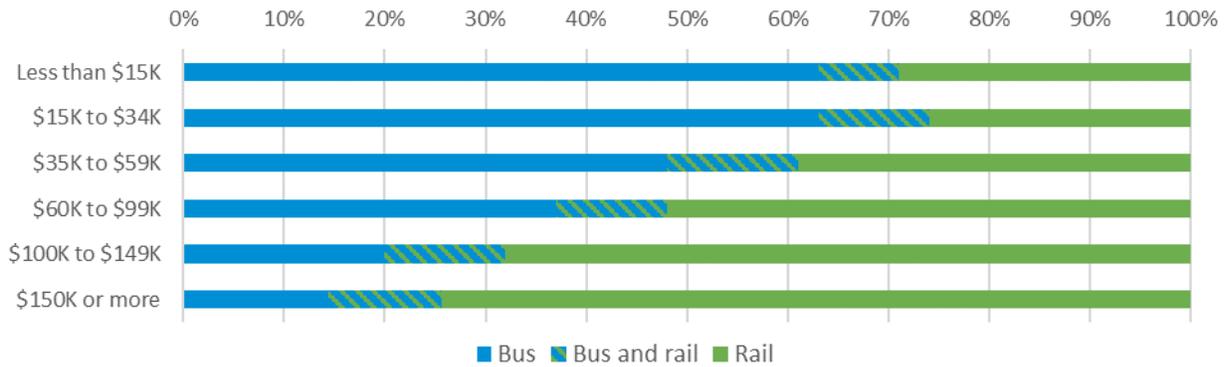


Source: CMAP analysis of Regional Transportation Authority (RTA) data through March 2023.

Buses disproportionately serve the lowest-income people in the region, as shown in **Figure 6**. For residents from households with less than \$35,000 in income, more than 70 percent of all transit trips relied on a bus. In contrast, among the highest-income residents in the region, less than 30 percent of transit trips relied on a bus.

One reason for this variation is that in the urban core of the region, residents who live farther from rail have lower incomes and longer commutes. People who primarily commute by bus tend to have much lower average household incomes than those who primarily commute by rail. Further analysis can be found in **Appendix 1**.

Figure 6: Household income of transit riders in the CMAP region by mode, 2019



Source: CMAP analysis of My Daily Travel data

The region is falling behind on bus priority infrastructure

Dedicated bus infrastructure can make bus service faster and more reliable. The region has invested in some bus supportive infrastructure, but Illinois has not kept pace with peer regions to implement major bus priority projects. Some recent progress throughout northeastern Illinois includes the following (refer to the **Regional context** section for additional information):

- Bus-on-shoulder/flex lanes:** Pace buses can run on shoulders and specially designated “flex lanes” on several regional highways,⁵ significantly improving speed and schedule reliability. These operations are currently available on the Stevenson Expressway (I-55), Jane Addams Tollway (I-90), and Edens Expressway (I-94), with future expansion planned for the Tri-State Tollway (I-294) and potentially the Eisenhower Expressway (I-290).⁶ Design and implementation of these projects are led by IDOT and the Illinois Tollway in close coordination with Pace.
- Loop Link:** The Loop Link, a Chicago Department of Transportation (CDOT)-led project developed in collaboration with CTA, implemented around two miles of bus priority infrastructure on some of the highest-ridership and slowest bus route segments in the City of Chicago. The project included bus lanes, dedicated queue jump signals, and enhanced passenger stations.



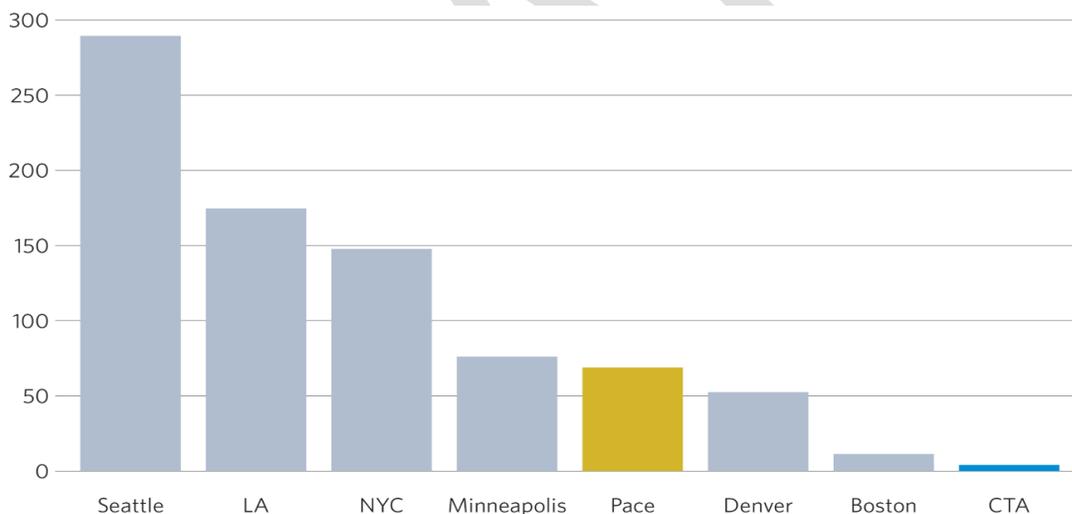
⁵ Mass Transit, Pace celebrates 10th anniversary of bus on shoulder, 2021. <https://www.masstransitmag.com/bus/press-release/21247239/pace-suburban-bus-pace-celebrates-10th-anniversary-of-bus-on-shoulder>

⁶ Pace, Expressway-Based Routes, Accessed 2023. <https://www.pacebus.com/express>

- Pace Pulse:** Pace’s Pulse program implements limited-stop service and enhanced onboard and station amenities along Pace’s highest-ridership corridors. While the two Pulse corridors implemented to date (Pulse Milwaukee Line and Pulse Dempster Line) do not include bus lanes or other bus priority infrastructure, such enhancements have been identified for inclusion on future Pulse corridors on Halsted Street (a project that was recently awarded a \$20 million grant from USDOT’s RAISE grant program) and 95th Street, both IDOT-jurisdiction roadways.
- CTA Bus Priority Zones:** Over the past four years, CTA and CDOT have successfully partnered to begin introducing more widespread deployment of bus lanes. Rather than a BRT-style approach of implementing full-length bus priority corridors, the Bus Priority Zone (BPZ) program takes a targeted approach, identifying bus “slow zones” in particularly congested areas and implementing limited segments of bus lanes to relieve these congestion points.⁷

Despite these investments, the region lags behind its North American peers in dedicated bus infrastructure, as shown in **Figure 7**. As measured by miles of dedicated busway, CTA and Pace in the Chicago region are significantly outpaced by peer regions.

Figure 7: Miles of dedicated busway for CTA bus and Pace versus peer regions, 2021



Source: CMAP analysis of NTD data. Pace figures include “Bus on Shoulder” program.

Progress has been slow, and the agencies have not always collaborated as well as they could. This has led to some initiatives failing entirely and others being significantly scaled back. The unrealized Ashland Avenue BRT project is one instructive example. In the early 2010s, CTA and CDOT announced a vision for a center-running BRT system on Ashland Avenue, spanning a 16-mile north-south corridor from Irving Park to 95th Street. The concept included the transformation of left lanes in both directions of Ashland into exclusive bus lanes, accompanied by median bus stations spaced every half mile. CTA projected that, with BRT, buses could nearly

⁷ CTA, Bus Priority Zones, Accessed 2023. <https://www.transitchicago.com/newsprojects/bpz/>

double their average speed to 16 mph as compared to buses operating in mixed traffic along Ashland Avenue.⁸

Figure 8: Vision for Ashland BRT Corridor



Source: CTA

A decade later, Ashland BRT remains indefinitely stalled. Notably, the project was unable to move forward despite a strong shared vision among public agencies and the considerable mobility and equity benefits BRT would have afforded thousands of riders.

Among the challenges, a contingent of business groups and property owners along Ashland opposed the loss of automobile travel lanes, left turn capabilities, and parking spaces.⁹ Communicating the tradeoffs common to BRT implementation proved elusive. Compounding the complexities of project delivery is the multijurisdictional nature of the roadway network throughout northeastern Illinois. Although the project would have operated almost entirely on a single street, Ashland Avenue has segments controlled by IDOT, Cook County, and Chicago, as well as various political jurisdictions including a mayor and multiple aldermanic wards.

While BRT remains a potential concept for Ashland, the project will be challenging to realize unless the region and state change the way bus corridor projects are prioritized and delivered. Educating the public and stakeholders about the tradeoffs necessary to implement bus corridor improvements can pay dividends, as will sustained political will and proactive community outreach. Recommendations informed by these lessons learned are explored further in the **Recommendations** section.

Roadway jurisdiction limits control and adds complexity

While the region's transit agencies understand the challenge and have had limited success in addressing bus speed and reliability issues, fragmented roadway jurisdiction remains a major obstacle to widespread enhancements to bus infrastructure and service improvements.

⁸ CTA, Ashland Bus Rapid Transit, Accessed 2023. <https://www.transitchicago.com/ashlandbrt/>

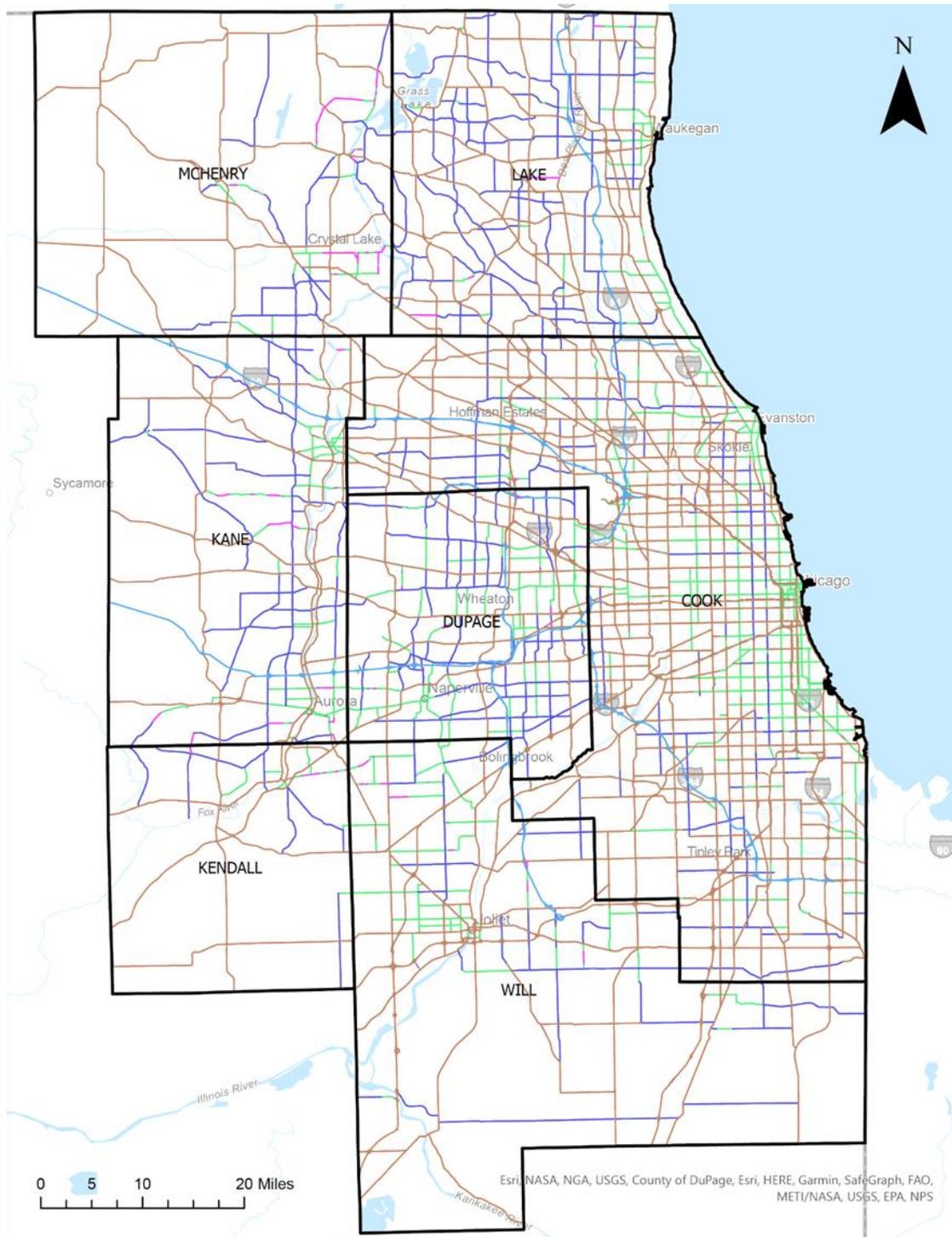
⁹ Per planning documents from CTA and CDOT: Two general travel lanes (one in each direction) would be dedicated as center running bus-only lanes. Most left turns would have been removed to keep buses and general through traffic moving. Approximately 90% of parking and loading zones would have been retained on both sides of Ashland Avenue.

Figure 9 shows the complexity of roadway jurisdictions in northeastern Illinois. Local municipalities, counties, townships, IDOT, and other entities all have jurisdiction over various arterial streets and have significant authority over roadway design and traffic operations on the roadways within their jurisdictions. In some cases, there are multiple overlapping jurisdictions on a single road segment; for example, in Chicago most traffic signals on IDOT-controlled roads are maintained by CDOT. All of this creates multi-layered approvals and inconsistent priorities when attempting to take a regional and systemic approach to improving bus service.

As noted in the previous section, this complexity can apply even when working on just a single roadway. Many bus routes and proposed transit projects cross multiple jurisdictions (including multiple cities), especially in Pace’s service area which covers nearly 300 municipalities. For example, Pace’s Pulse Dempster Line, opening in late 2023, crosses through eight municipalities and includes infrastructure under the permitting jurisdiction of those eight municipalities plus IDOT.

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Figure 9: Roadway jurisdiction in northeastern Illinois



Legend

- | | |
|---|--|
|  Illinois Division of Highways |  Private (Including Toll Authorities) |
|  County |  Adjacent Township or Road District |
|  Municipality |  Township or Road District |

Transit agencies generally have no direct authority over the roadway itself, nor adjacent items including driveways, curb cuts, and adjacent land uses. Without proactive interagency collaboration, transit operators have almost no ability to make bus service faster or more reliable.

In addition, the privatized parking meter contract with Chicago Parking Meters LLC¹⁰ has left the City of Chicago with significantly diminished control over on-street meters. This has also stymied efforts to expand public transit, as dedicating space for bus priority often requires targeted removal of parking.

IDOT's Office of Highways Project Implementation¹¹ (OHPI), which oversees the district offices that lead and oversee road projects, does not have staff focused on transit. The District organizations fall entirely under the OHPI: roadway projects are designed, permitted, and delivered at the District level. Coordination with or prioritization of transit is effectively limited due to this organization; while IDOT also has a transit office, it is organizationally disconnected from the District structure, and primarily focuses on non-roadway modes and on supporting grants for downstate transit agencies. Stronger integration between transit planning and roadway planning at IDOT would benefit the entire state, not just northeastern Illinois. Transit-focused staff at the Districts would not only bring a transit perspective to IDOT-led roadway projects but would also help to coordinate the complex review and approval process for bus infrastructure projects led by others, which require review and coordination between IDOT District bureaus focusing on geometrics, traffic, and permitting.

As explored later in this memo, DOT-led or DOT-partnered transit projects have seen the most success because of the importance of DOT "buy-in" when proposing significant changes to geometry or traffic operations on DOT-controlled roadways. The addition of dedicated transit staff within the agencies' District offices would create a single point of communication between the DOT and the agencies.

Design standards can be a major impediment to progressive roadway designs

In addition to opportunities to make bus service faster and more reliable, there is a related challenge: many of the region's major arterials, especially in the suburbs, are not designed in a way that facilitates safe and comfortable access to transit, due to lack of sidewalks, lack of crosswalks, and excessive speeds, among others. Remedying this across the region's vast roadway network would be extremely costly and take decades; identifying key priority bus corridors could help focus efforts where they can be most impactful.

¹⁰ Chicago Parking Meters, LLC offers temporary metered parking spaces by street, garage, and lot on a contract and fee basis.

¹¹ For more information, reference: IDOT, Office of Highways Project Implementation, Accessed 2023. <https://idot.illinois.gov/about-idot/offices/ohpi>

Design approval and permitting are an often complex and difficult-to-predict process involving multiple overlapping jurisdictional agencies (in Chicago many arterials under IDOT jurisdiction have traffic signals maintained by CDOT, requiring approval from both agencies for the same stretch of road). Agency priorities do not always align.

IDOT Bureau of Design and Environment (BDE) and Bureau of Local Roads and Streets (BLRS) design standards also often make transit-supportive design more challenging. For example, geometric design standards that focus on accommodating the largest vehicles (e.g., WB-65 turning radii) at intersections works against pedestrian- and transit-friendly designs including bump-outs, bus bulbs, etc. Similarly, stringent line-of-sight rules that emphasize the ability to drive fast make it harder to place transit-friendly infrastructure such as bus shelters and signage in the right of way, especially near major intersections. It should be noted that a recent memorandum of understanding (MOU) between IDOT and CDOT seeks to streamline approvals and fast-track safety improvements on IDOT-jurisdiction roadways in the City. The MOU permits CDOT to self-certify improvements that previously were subject to IDOT review and approval on a case-by-case basis as design exceptions, and also provides flexibility on the design vehicle to use for evaluating intersection curb radii. The MOU is a model of collaboration that could be expanded to other jurisdictions and an expanded list of improvements, either region-wide or specifically applied to designated transit corridors.¹²

Another challenge pertains to IDOT's current approach to evaluating changes in roadway capacity, intersection design, and traffic signal operations. Today, these evaluations depend heavily on a measure known as *level of service* (LOS). LOS measures average motorist delay, and thus rewards accommodating free-flow traffic for individual motorists. LOS does not fully account for transit's ability to move large numbers of people more efficiently, nor does it account for the phenomenon of induced traffic¹³ that results from increased roadway capacity. The LOS approach can thus incentivize ongoing roadway expansion projects, and conflicts with the climate and safety benefits of reducing driving and encouraging the use of other modes like transit. Other states, notably California, have begun to transition from an LOS-based approach when evaluating transit-supportive roadway changes¹⁴. For example, rather than penalizing projects for increasing congestion, California now promotes projects that result in a reduction in VMT and prioritization of transit and other modes.

¹² City of Chicago, IDOT and CDOT Reach Agreement to Streamline Implementation of Safety Improvements, 2023. https://www.chicago.gov/city/en/depts/cdot/provdrs/future_projects_andconcepts/news/2023/january/idot-and-cdot-reach-agreement-to-streamline-implementation-of-sa.html

¹³ For more information, reference: CMAP, Measuring and Mitigating Traffic Congestion, Accessed 2023. https://www.cmap.illinois.gov/updates/all/-/asset_publisher/UIMfSLnFfMB6/content/measuring-and-mitigating-traffic-congestion-part-2

¹⁴ For more information, reference: MTC, SB 743 (LOS to VMT Transition), Accessed 2023. <https://mtc.ca.gov/planning/transportation/driving-congestion-environment/sb-743-los-vmt-transition>

Regional context

Although many challenges remain, the region’s transit operators and roadway agencies have made some progress in advancing bus priority projects, as well as planning for more ambitious future solutions. Regional transit agencies have developed plans that outline both the types, and proposed locations, of transit-priority roadway infrastructure. These include CTA and CDOT’s *Better Streets for Buses Plan* and Pace’s *Rapid Transit Program*.

Better Streets for Buses Plan

The draft plan¹⁵ would establish Chicago’s first comprehensive framework to:

- Prioritize bus performance and access to transit for people and places with the highest needs.
- Improve the bus experience for current riders and make it more attractive to prospective riders.
- Guide how CTA and CDOT utilize infrastructure to achieve faster and more reliable bus service, improved access to bus stops, and better bus stops.

The draft Better Streets for Buses Plan includes a Network of Corridors component to guide implementation and prioritization of street treatments to improve the bus experience on the 45 neighborhood corridors and 16 downtown corridors identified in the plan. However, no specific infrastructure changes were designed as part of the Better Streets for Buses planning process. Those specific designs will require follow-on studies that will again require close collaboration between CTA, CDOT, and IDOT.

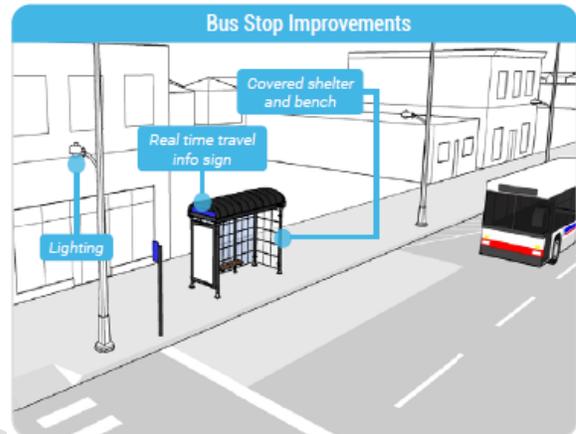


The Better Streets for Buses Plan proposes a “toolbox” of options to improve infrastructure for buses. These tools are categorized as Bus Stop Treatments, Bus-Friendly Streets, and Bus-Friendly Intersections. Each toolbox section includes why its tools are important, where they should be implemented, and what should be considered in implementations.

¹⁵ CTA and CDOT, Better Streets for Buses Plan Draft for Public Comment, 2022. <https://betterstreetsforbuses.com/8166/widgets/25905/documents/19568>.

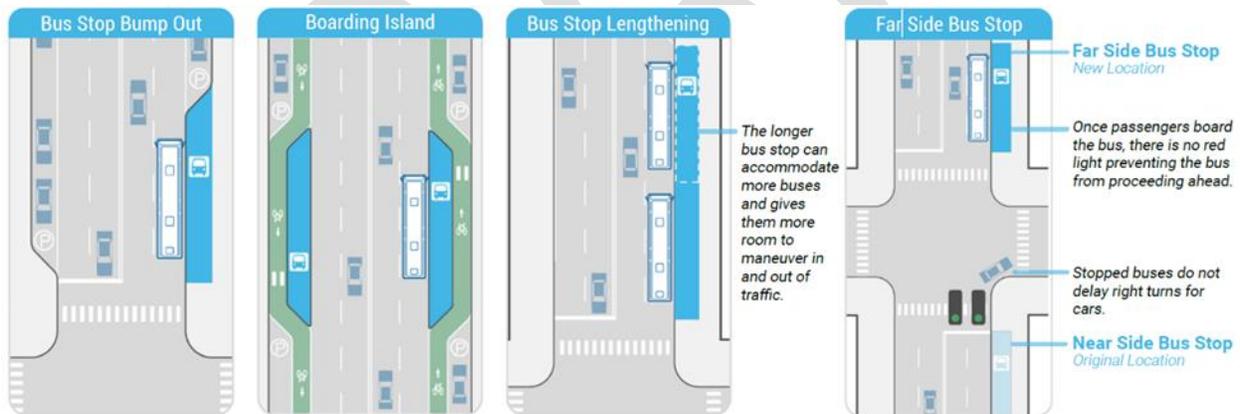
Good bus service begins at the bus stop, as described in CDOT’s Bus Stop Treatments section. Even with perfectly implemented street and intersection improvements, there would be no passengers to serve if they cannot easily access the service. Some examples of treatments to consider include accessible pedestrian facilities, improving nearby sidewalks and crosswalks, and reducing conflict with nearby driveways. In addition to improving the nearby facilities, there is plenty that can be done at the bus stop itself, such as adding overhead shelter, seating, lighting, and arrival time signage, as shown in **Figure 10**.

Figure 10: Bus Stop Improvements



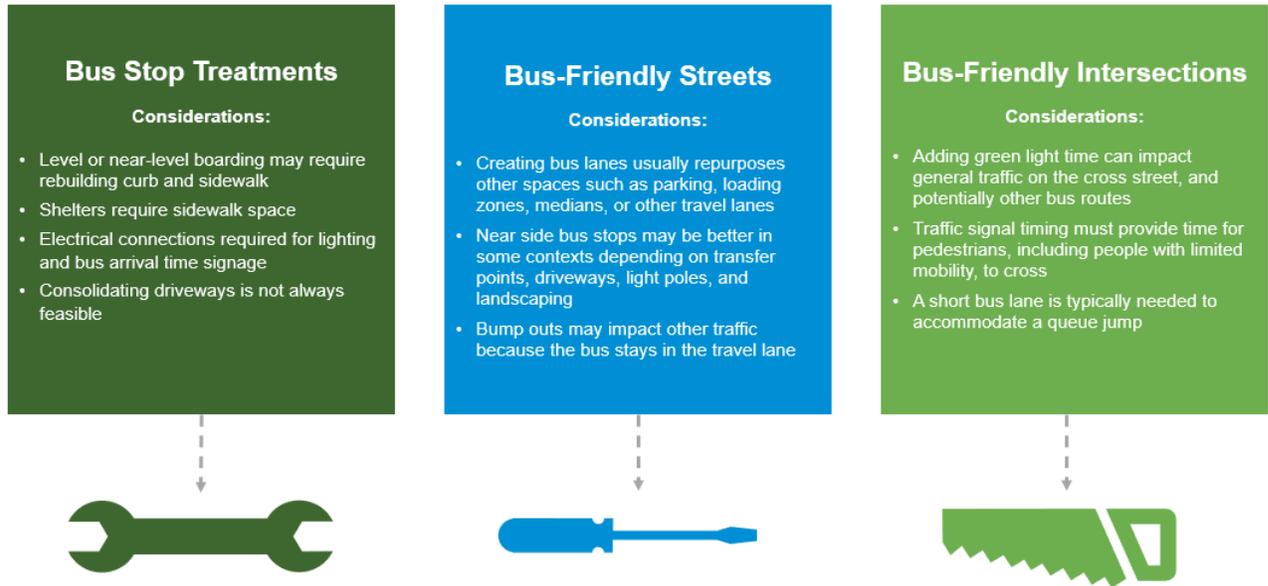
Many of CDOT’s Bus-Friendly Streets tools overlap with improvements listed in this memo, particularly in the potential solutions for bus priority infrastructure. Both CMAP and CDOT highlight bus lanes as a crucial component of bus infrastructure, best implemented in densely populated areas to help ease congestion and separate the bus from traffic. Better Streets for Buses also notes that bus-bike lanes could provide the same benefits to cyclists. Some other street improvements, such as bump outs and boarding islands, are shown in **Figure 11**.

Figure 11: Bus-Friendly Street Improvements



Better Streets for Buses recommends that each tool in the toolbox be considered as a system. While some improvements could technically be implemented alone, they are most effective when working in conjunction. For example, implementing transit signal priority (TSP) at an intersection can prove useful in improving bus speeds and on time performance, but combining TSP with a bus-only lane would further reduce congestion for buses, resulting in an overall faster and more reliable system. Other considerations for each toolbox section are listed in **Figure 12**.

Figure 12: Better Streets for Buses Toolbox



Loop Link

CDOT, in partnership with CTA, completed the Loop Link project in downtown Chicago in late 2015 with the goal of improving bus travel times along four roads carrying seven bus routes in Chicago’s Loop and West Loop. Loop Link features several bus priority infrastructure components including dedicated bus-only lanes, dedicated stations, raised platform boarding, queue jumping signals, protected bike lanes, and expanded sidewalk space.



Loop Link has resulted in mixed outcomes in improving travel times. Buses traveling west from the Loop during evening rush hour have seen the largest travel time improvement.¹⁶ Unauthorized vehicles occupying (traveling, idling, parking) bus-only lanes have been a consistent and significant impediment to maximizing speed. Recently, the City of Chicago undertook additional steps to enforce bus-only lanes in the Loop by directing parking enforcement and traffic aides to ticket vehicles occupying bus-only lanes.¹⁷ Additionally, the use of cameras to ticket private vehicles

¹⁶ Chicago Reader, Loop Link bus corridor isn’t yielding the travel-time improvements hoped for, 2018. <https://chicagoreader.com/columns-opinion/loop-link-bus-corridor-isnt-yielding-the-travel-time-improvements-hoped-for/>

¹⁷ Streetsblog Chicago, Bus-sted: City says traffic aides will enforce Chicago Ave. and Western Ave. bus lanes, 2020. <https://chi.streetsblog.org/2020/01/07/bus-sted-city-says-traffic-aides-will-enforce-chicago-ave-and-western-ave-bus-lanes>

parked in those lanes was recently authorized in the Smart Streets Pilots Ordinance, described in further detail below.

Jeffery Jump

CTA, in partnership with CDOT, opened the Jeffery Jump bus service in 2012 along Jeffery Boulevard and Lake Shore Drive between the Loop and the Far South Side of Chicago. The corridor has a mix of peak-hour bus-only lanes, TSP, queue jumping, and a non-stop service section between downtown and 67th Street along Lake Shore Drive. Jeffery Jump also features enhanced accessible stations and Jump-branded buses with stops every half-mile.¹⁸

Bus Priority Zones

CTA and CDOT also partnered to construct BPZs starting in 2019 to address bus slow zones and improve bus speed and reliability throughout the city. Each BPZ is tailored to the needs in the zone through a variety of improvement options including designated bus-only lanes, queue jumping, signal timing optimization, optimization of bus stop locations, sidewalk reconfiguration, and streetscape improvements.¹⁹

Smart Streets Pilots Ordinance

In March 2023, the Chicago City Council passed the Smart Streets Pilots Ordinance to address bus efficiency and traffic safety in the Loop.²⁰ One of the pilots authorizes the City to issue tickets to the registered owners of vehicles found to be parking in bus lanes, bus stops, crosswalks, bike lanes, and no parking zones. Cameras will be fixed to CTA and City vehicles as well on City-owned poles. Data from the cameras will be reviewed and then sent to the Department of Finance to issue tickets via mail. For the first 30 days of a new camera being activated, only warnings will be issued to vehicles in violation. Additionally, low-income drivers will be eligible for reduced-priced tickets through the Clear Path Relief²¹ program.

Pace Bus-on-Shoulder

In 2011, the ILGA permitted Pace to conduct a bus-on-shoulder demonstration project on I-55 in partnership with IDOT, RTA, and the Illinois State Police. Buses can only use the shoulder when

¹⁸ CTA, CTA Begins Jeffery Jump Bus Service, 2012. <https://www.transitchicago.com/cta-begins-jeffery-jump-bus-service/>

¹⁹ CTA, Bus Priority Zones, Accessed 2023. <https://www.transitchicago.com/newsprojects/bpz/>

²⁰ City of Chicago, City Council Passes Smart Streets Ordinance to Improve Traffic Safety and Public Transit Efficiency, 2023.

https://www.chicago.gov/city/en/depts/cdot/provdrs/future_projects_andconcepts/news/2023/march/SmartStreetsPilots.html

²¹ City of Chicago, Clear Path Relief Pilot Program (CPR), Accessed 2023.

<https://www.chicago.gov/city/en/sites/clear-path-relief-pilot-program/home.html>

general traffic speeds are less than 35 miles per hour (mph). Additionally, buses using the shoulder cannot travel more than 15 mph faster than traffic and can never travel faster than 35 mph. Following the success of the I-55 demonstration project through increased ridership and improved on-time performance, the ILGA enacted legislation in 2014 to permanently allow bus-on-shoulder service on all expressways and tollways in the region. Today, 13 bus routes use shoulders on two IDOT-owned expressways (I-55 and I-94) and Flex Lanes on one Tollway (I-90), with plans to expand these operations to other roadways. Ridership along the I-55 corridor, which is used by five routes, increased more than 700 percent following bus-on-shoulder implementation. Service is both faster and more reliable; on-time performance has improved to over 90 percent, from 70 percent prior to bus-on-shoulder being permitted.²²

Pace Pulse

Pace also operates a growing network of *Pulse* lines, premium service on high-ridership arterial corridor featuring limited stops and enhanced onboard and station amenities including accessible, branded stations with heated shelters and real-time bus tracker information.²³ Pace launched their first Pulse Line in 2019 along Milwaukee Avenue between the Jefferson Park Transit Center on the Far North Side of Chicago and suburban Niles. The Pulse Dempster Line between Evanston and O’Hare International Airport will open later in 2023. Three additional corridors are currently in development: South Halsted Street from the CTA Red Line 95th/Dan Ryan station south to suburban Harvey; 95th Street from the CTA Red Line 95th/Dan Ryan station west to suburban Palos Hills; and Cermak Road from the CTA Pink Line 54th/Cermak station to suburban Lombard. In Pace’s 2021 Strategic Vision Plan, *Driving Innovation*,²⁴ Pace outlines its commitment to continue implementing Pulse lines to strengthen transit connections in the metro region as part of their Rapid Transit Program. Pace’s near-term Pulse network vision is shown in **Figure 13**.



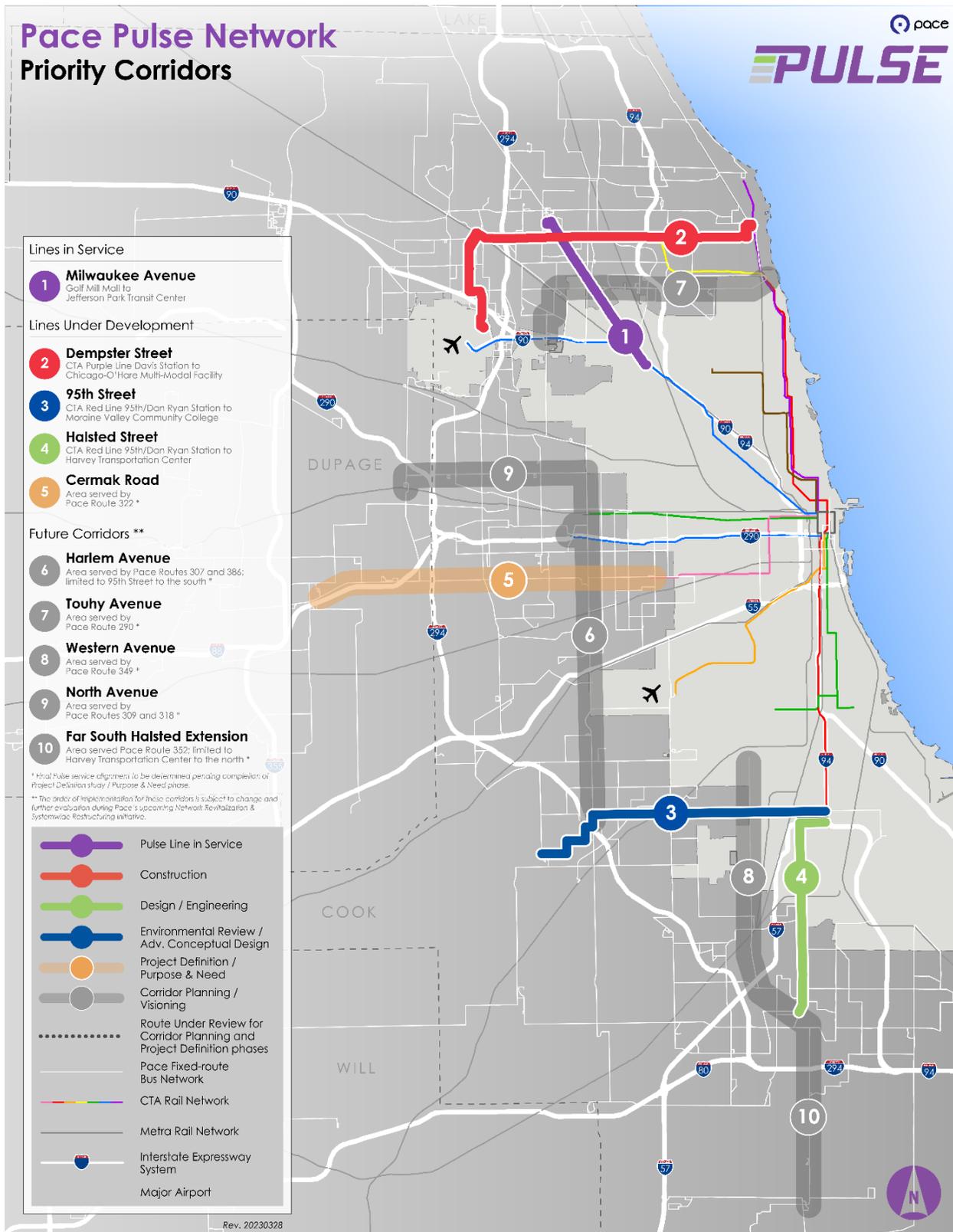
²² Pace, Expressway-Based Routes, Accessed 2023. <https://www.pacebus.com/express>

²³ Pace, Pulse: Pace’s Rapid Transit Service, Accessed 2023. <https://www.pacebus.com/pulse>

²⁴ Pace, Driving Innovation: The Pace Strategic Vision Plan, 2021.

https://www.pacebus.com/sites/default/files/2021-10/Driving%20Innovation%20Plan_September%202021.pdf

Figure 13: Pace Pulse Network Priority Corridors



Regional Planning Context

What does RTA's *Transit is the Answer* say?

Earlier in 2023, the RTA approved its five-year plan, "Transit is the Answer," which calls on its agencies to build more transit-friendly streets and BRT in the region.

"Partner with roadway agencies to build more transit-friendly streets and advance bus rapid transit."

What does CMAP's *ON TO 2050* say?

Invest in and protect transit's core strengths by implementing BRT and other investments that improve on-road transit service.

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Other regions have made significant progress

Northeastern Illinois is not alone in confronting bus speed and reliability issues. The region can learn from peers across the country, including in Seattle, Boston, New York, and the Twin Cities, as discussed below. Additional details are available in **Appendix 2**.

AGENCY	REGION	KEY FINDINGS
 Massachusetts Bay Transportation Authority	Boston, Massachusetts	<ul style="list-style-type: none"> • Municipalities in the Boston area, in collaboration with the Massachusetts Bay Transportation Authority (MBTA) and MassDOT, led pop-up bus lane pilot programs using traffic cones to temporarily mark bus-only lanes. • Following success of the pilots, permanent dedicated bus infrastructure has been expanding throughout the region. Partnerships have been key to this success.
 	New York City, New York	<ul style="list-style-type: none"> • New York City Department of Transportation (NYCDOT), in collaboration with the Metropolitan Transportation Agency (MTA), leads the Select Bus Service (SBS) program to improve bus speed and reliability in the busiest corridors through dedicated bus-only lanes with automatic camera enforcement, off-board fare collection, and signal priority.
	Minneapolis / St. Paul, Minnesota	<ul style="list-style-type: none"> • In the Twin Cities region, local governments initiate bus project planning in close collaboration with Metro Transit and the Minnesota Department of Transportation (MnDOT). • MnDOT has a transit office with staff that are dedicated to working alongside Metro Transit and local governments on transit projects. • Metro Transit leads implementation, maintaining collaboration with local governments and MnDOT.
	Seattle, Washington	<ul style="list-style-type: none"> • King County Metro is a division of county government, not an independent agency. King County Metro's RapidRide routes offer fast, reliable, high-frequency bus service through bus-only lanes, TSP, queue jumping, and off-board fare collection for riders with transit cards.

NACTO Organizational Guidance

The National Association of City Transportation Officials (NACTO) emphasizes the importance of a cohesive organizational structure in multiple reports.

NACTO's *Structured for Success* identifies the best organizational structures and procedures for city governments and agencies to adopt that result in the consistent delivery of high-quality projects.²⁵ The report highlights the challenges faced by regions when roadway jurisdiction and transit operations are under separate agencies, a common situation that is applicable to the Chicago region. To address this challenge, the report cites case studies and recommends strategies to overcome this challenge through clearly defined organizational structure, clear and documented processes, and strategic deployment of staff dedicated to interagency joint project delivery.

NACTO's *Green Light for Great Streets* considers the importance of organizational structure through an assessment of the responsibilities, capabilities, and resources of transportation departments in the United States.²⁶ The report also selects two agencies, San Jose and Pittsburgh, to participate in its "Agency Accelerator" program. Both accelerator programs focused on messaging and engagement strategies, and found that strong vision from the top of a municipal transportation agency was key to successful project prioritization and implementation.

²⁵ NACTO, *Structured for Success*, 2022. https://nacto.org/wp-content/uploads/2022/12/Structured_For_Success_NACTO_Jan-6-2023_Reduced.pdf

²⁶ NACTO, *Green Light for Great Streets*, 2018. <https://nacto.org/wp-content/uploads/2018/09/NACTO2018-Green-Light-For-Great-Streets-Report.pdf>

Bus Speed and Reliability Toolbox

There are a variety of tools available for improving bus speed and reliability. Dedicated bus-only lanes are among the most visible but are not the only option and can also be more effective when coupled with other complementary improvements. The region can pursue both dedicated bus lanes and other bus priority infrastructure in a context-sensitive way. Many tools cited here are also identified in publications such as the Better Streets for Buses Plan²⁷ and NACTO's Transit Street Design Guide.²⁸

- **Dedicated bus lanes:** Reduce delays due to traffic congestion and raise the visibility of high-quality service.
- **Transit signal priority:** Modifies traffic signal timing or phasing when transit vehicles are present.
- **Queue jumps:** Combine short bus lanes with either a leading bus interval or active signal priority.
- **Bus bulbs / floating bus stops:** Move the bus stop into the roadway on a raised island or curb extension, allowing the bus to stop in the traffic lane, adding more space for waiting passengers and speeding service.
- **Reversible / contraflow lanes:** Enable buses to take more direct routes not available to general traffic.
- **Bus-on-shoulder:** Creates a dedicated bus lane on highways at a low cost.
- **All door boarding / off-board fare collection:** Reduces dwell time at stops as fares are paid prior to boarding, and passengers can use all doors to board. Enforced through on-board proof of payment inspection.
- **Camera enforcement:** Discourages drivers from illegally blocking bus lanes and stops, through automatic ticketing.
- **Congestion/road pricing:** Reduces congestion and provides revenue for transit.

Definitions

Bus Priority: An umbrella term for the variety of street treatments that give some increased degree of priority to bus riders and buses in order to improve travel time, reliability, and/or comfort. For example, dedicating expanded sidewalk space for bus riders waiting at a stop, giving a bus its own lane free of traffic for a segment of its route, or having a traffic signal to give a bus a head start ahead of other vehicles are all things that give buses priority and improve the experience of taking the bus. Northeastern Illinois is one of many regions across the nation and world focusing on bus priority improvements to use streets more efficiently, serve transit riders better, attract new riders, and advance transportation equitably and sustainably.

Street Treatments: An enhancement to bus operations or the built environment that streamlines bus movement, improves reliability, and/or upgrades the experience of accessing the bus.

Corridor: An identified set of streets or bus routes that could be prioritized for future street treatments.

Additional details about these tools are available in **Appendix 3**.

²⁷ CTA and CDOT, Better Streets for Buses Plan Draft for Public Comment, 2022.

<https://betterstreetsforbuses.com/8166/widgets/25905/documents/19568>

²⁸ NACTO, Transit Street Design Guide, 2016. <https://nacto.org/publication/transit-street-design-guide/>

Recommendations

1. Develop a regional bus priority plan and establish an interagency structure accountable for its implementation.

To support cohesive regional bus priority efforts, the State of Illinois should consider mandating the creation of a working group to focus on bus priority infrastructure, comprised of representatives from CTA, Pace, Metra, IDOT, CDOT, Illinois Tollway, local/county governments, CMAP, and the advocacy community (referred to in this document as the “Bus Priority Working Group.” The State should designate funding for the group to perform its work and appoint a transit lead within IDOT District 1 to participate in the group and serve as a primary liaison for District 1. The working group should meet regularly to streamline the identification, design, approval, and implementation of bus priority projects. The precise structure of the group and under which organizational auspices it is organized should be an ongoing topic for discussion.

The initial primary responsibility of the bus priority working group should be creation of a **plan for bus priority efforts in the region**. Local and regional planning priorities should be considered in development of the regional bus priority plan. Components of the plan should include the identification of bus priority corridors, multi-agency coordination needs, and revisions to design manuals and traffic measures. Bus priority corridors should be officially designated with a mechanism for revisions as needed.

Once the initial bus priority plan is completed, the working group would shift toward a focus on implementation, meeting regularly to develop investment priorities, identify opportunities to streamline approval processes, coordinate on grant opportunities, work through design challenges, and undertake periodic updates to the plan.

An additional function of the working group would be to work collaboratively with IDOT to revise IDOT’s design manuals and traffic performance measures to expressly address and prioritize bus priority features including the tools outlined above in the **Bus Speed and Reliability Toolbox** section. Many changes can build upon the recent memorandum of understanding (MOU) executed between IDOT and CDOT to ease the burden of implementing human-scale modifications to IDOT roadways, especially in urban contexts. Consideration should also be made for transitioning to VMT as the key metric in traffic analysis instead of LOS.

The State could also mandate that, once bus priority corridors are identified, that transit-supportive design standards be mandatory for all roadway capital projects on these designated corridors. These could include installation of bus lanes or queue jumps where transit agency data supports their installation; pedestrian-friendly roadway and intersection geometry; complete streets elements such as sidewalks, crosswalks, pedestrian refuges, and bump-outs; right of way

preservation for future enhanced/BRT stations (or construction of the stations themselves if sufficient planning has been completed); and/or implementation of TSP infrastructure. Complying with this requirement could become a condition of other funding programs (e.g., those administered by CMAP).

Bus speed improvements often come with tradeoffs (reduced parking; general purpose lanes converted to transit lanes; turn prohibitions) that can lead to significant opposition. The bus priority working group can also play a role in educating stakeholders and the public about the benefits and tradeoffs necessary to implement regional bus priority efforts.

The ILGA should create firm deadlines for the working group to complete its initial work on a bus priority plan as well as meet metrics for implementation. Additionally, the working group should be required to produce an annual progress and expenditure report that includes before and after metrics evaluating the impacts on things like traffic flow, parking, and property values in corridors where roadway capacity was transferred to buses from general traffic.

Legislative actions

- Mandate the creation of and participation in the bus priority working group, bus priority plan, and additional working group responsibilities
- Require ongoing reporting and engagement on implementation of bus priority projects (see parallel funding recommendation)

State agency actions

- Identify staff to participate; IDOT District 1 transit liaison (see Recommendation #3) to participate in the working group and convene with other District 1 staff, coordination implementation, grants, etc.

Local/regional actions necessary to support:

- CDOT/other local governments coordinate with Pace/CTA on bus priority
- CMAP, cities incorporate priority corridors into local and regional plans and funding criteria

Rationale

- DOTs have roadway jurisdiction and can streamline project delivery including incorporating bus priority into highway programming decisions and designs.
- The transit agencies do not own or control the roadways on which they operate their buses. CTA and Pace can plan and even design bus priority projects, but it is up to the roadway agencies to permit and/or implement them. Transitioning from an applicant/reviewer model to a partnership model would make this process far more efficient, both in terms of streamlined design and approval, and also to ensure that the same roadway segments aren't reconstructed several times by different agencies in close succession. In many cases, the roadway agencies could design and build these improvements themselves in close coordination with the transit agencies.

- Systems and metrics can be changed to favor transit by prioritizing the movement of people, not cars. Current traffic analysis methods in Illinois, including the LOS measure, creates a catch-22 for bus priority: oftentimes the only locations where traffic models allow for diminished automobile capacity to create bus lanes are the same locations where bus lanes are not as needed because of lack of congestion. Consequently, existing systems reward the accommodation of free-flowing traffic for private vehicles while discounting transit’s ability to move many people efficiently. As explored previously, California changed key evaluation criteria of transportation impact from LOS to change in VMT, and rewarded projects that led to a reduction in VMT instead of an increase in capacity for private vehicles.

Evaluation

Policy

CATEGORY	RATING	RATIONALE
 MOBILITY	High	Unified planning leads to a more coordinated approach and more aggressive rollout of transit improvements.
 EQUITY	High	Bus passengers tend to be lower income and a higher proportion are from underserved communities. More success with regional bus priority efforts means more inclusive growth and more equitable outcomes.
 ECONOMY	High	Human-scale multimodal corridors are economic development engines. This is rated High under the assumption that the plan will have binding elements mandating implementation of bus priority corridors.
 ENVIRONMENT	High	Increases the likelihood of successful transit projects; in turn leads to air quality improvement, congestion mitigation, and energy savings. Emphasizing VMT reduction advances the region’s climate goals. This is rated High under the assumption that the plan will have binding elements mandating implementation of bus priority corridors.
 REGIONAL BENEFIT	Regional	The working group structure means diverse interests have a seat at the table.

Process

CATEGORY	RATING	RATIONALE
 ADMINISTRATIVE FEASIBILITY	High	<p>Does not require a new agency or organization. Limited overhead.</p> <p>Agency acceptance at IDOT and transit agencies could prove challenging.</p> <p>Risk of a negative outlook if the plan does not lead to implementation.</p>

 POLITICAL FEASIBILITY	Med	<p>Formation of the working group does not require enabling legislation. Transit agencies jointly support stronger partnerships with roadway agencies.</p> <p>Public opposition to reallocating roadway capacity or spending on public transit may lead to political tensions.</p>
 TIMING	Med	<p>Low barrier to implement; can be an immediate priority and can be rolled out incrementally.</p>
 STATE SPAN OF CONTROL	Med	<p>State could independently require the formation of a working group through legislation. State control is most direct during initial phase to establish the working group and delineate its statutory responsibilities.</p>

Net Cost / Investment

The only cost associated with this recommendation is the additional labor cost for agency staff and/or consultant support associated with convening the working group and producing the various work products. Due to potential efficiency gains associated with joint development of corridor capital improvements (programmed roadway projects incorporating transit elements that would otherwise be pursued separately), adoption of this recommendation could generate cost savings for the region.

Category	2025	2026	2027	2028	2029	2030
 Operations & Maintenance	\$1-\$2M	\$1-\$2M	\$1-\$2M	\$1-\$2M	\$1-\$2M	\$1-\$2M
 Capital	N/A	N/A	N/A	N/A	N/A	N/A

2. Dedicate funding to implement bus priority plan

To adequately support implementation of the bus priority plan, the State of Illinois should consider establishing a dedicated funding stream for bus priority improvements. The State could channel funding directly to CMAP; CMAP would in turn allocate the funds for IDOT-led projects on IDOT roadways, or award grant funding to municipalities, transit agencies, or regional agencies like RTA for projects located on non-IDOT roadways. CMAP could retain some funding to operate the bus priority working group.

Capital costs for bus priority improvements are inexpensive compared with major roadway projects, and can be implemented piecemeal. Federal grants are available, and FTA funding in particular has seen a significant shift toward funding lower-cost bus-based infrastructure investments, both through USDOT discretionary grant programs such as RAISE, and through the Small Starts program within the FTA Capital Investment Grants funding program. The selection and evaluation criteria for these grants are well-documented; transit agencies can and often do include evaluation of federal grant eligibility and suitability in their corridor planning processes; with state funding available to cover a required local match, many projects could quickly be submitted for federal grants. See **Appendix 3** for additional details on potential costs.

As noted above, regional transit providers have already documented many of the opportunities for investments in bus priority – both in terms of spot improvements and entire corridors. However, funding remains a significant impediment, along with ongoing coordination and sufficient staff resources. To achieve bus priority improvements regionally, especially in jurisdictions outside of Chicago, state funding would make a significant difference.

The Bus Priority Working Group should make recommendations for how the funds should be distributed to agencies and projects in alignment with the plan, in coordination with the MPO Policy Committee. The DOTs could deliver many projects directly in close partnerships with transit agencies. Progress will be benchmarked to ensure sustained progress.

Legislative actions:

- Create dedicated funding for bus priority
- Create benchmarks and reporting requirements to track progress (e.g., miles of priority projects delivered, changes in bus speeds on priority corridors, access to transit/jobs, equity measures, etc.)

State and local agency actions:

- Inclusion of priority projects into planning and construction
- Flex highway dollars for transit, or prioritize investments in priority bus corridors
- Include federal grant funding suitability analysis into corridor planning to support prioritization of projects for federal grants

Rationale

- Dedicated funding would accelerate the implementation of priority projects and leverage federal grants, which are currently at historic levels. Pace, for instance, does not have the resources to put up substantial non-federal match even where federal grants are available. This leaves federal dollars on the table.
- Assembling piecemeal funding from several municipalities is not always realistic for multijurisdictional corridors. In addition, many communities in Pace’s service area simply lack the necessary resources.
- As owners of the roadways, the roadway agencies (IDOT and municipalities) are in a unique position to implement bus priority (e.g., geometric changes, traffic signal changes, and right of way preservation).

Evaluation

Policy

CATEGORY	RATING	RATIONALE
 MOBILITY	High	Underfunding the public transit system has impeded the region’s ability to achieve its mobility equity goals.
 EQUITY	High	Projects that are funded can deliver benefits to all people, especially for historically disadvantaged populations.
 ECONOMY	High	Transit investments produce outsized benefits with a significant return on investment. Dedicated funding would accelerate the implementation of priority projects and enable cost efficiencies.
 ENVIRONMENT	High	Transit helps achieve shared sustainability goals and leads to air quality improvement, congestion mitigation, and energy savings.
 REGIONAL BENEFIT	Regional	Investment in infrastructure across jurisdictions keeps the region and state competitive. Offers more people more transportation options.

Process

CATEGORY	RATING	RATIONALE
 ADMINISTRATIVE FEASIBILITY	Med	IDOT and the other agencies are already experienced in managing grants and in project implementation.
 POLITICAL FEASIBILITY	Med	Challenging considering current fiscal uncertainties and many competing priorities (tradeoffs) that require revenue streams.
 TIMING	Med/ Long	Given competing needs and the potential requirement to implement a new source, the identification and allocation of a funding source could take several years. But improvements can be implemented incrementally, and funding is scalable to available resources because projects are less costly than other infrastructure projects.
 STATE SPAN OF CONTROL	Med	State could dedicate a new revenue stream through legislation. Partnerships are still needed to successfully implement.

Net Cost / Investment

The costs shown here are illustrative. Bus priority investments vary considerably based on project characteristics, and can be implemented incrementally based on available funding. The amounts shown here would be a significant down payment and would also be sufficient to leverage significant federal grants. Federal grants typically allow for a federal share of up to 80 percent, so a local investment of \$100 million could leverage up to \$500 million in infrastructure investment (although specific amounts may vary based on program and funding competition).

	2025	2026	2027	2028	2029	2030
 Operations & Maintenance	N/A	N/A	N/A	N/A	N/A	N/A
 Capital	\$25M	\$50M	\$75M	\$100M	\$110M	\$120M

3. Build staff capacity at roadway agencies to support bus priority

To complement dedicated State funding for bus priority improvements, and to facilitate the development of a bus priority working group, additional staff capacity is needed at IDOT, CDOT, and other local and county governments to aid in implementing the bus priority plan and resulting improvement projects. By building capacity, the region can better incorporate bus priority in programmed highway projects and give stronger consideration of bus priority in future programming decisions. Dedicated bus priority staff could be a statewide program, not limited to just northeastern Illinois.

CMAP and county governments could help coordinate staffing at local governments that do not require additional full-time staff capacity related to bus improvements. A dedicated IDOT staff person should participate in the Bus Priority Working Group as the IDOT representative and work to streamline complex IDOT design review and permitting approvals while also functioning as an internal IDOT resource to identify synergistic opportunities to incorporate transit-supportive infrastructure into IDOT-programmed roadway projects. Additional IDOT staff should provide technical assistance to communities that lack the capacity or resources to develop projects on their own.

Legislative actions:

- Create dedicated funding for staffing

State and local/regional agency actions:

- Hire dedicated transit staff
- Revise project approval procedures to empower bus priority staff to review roadway plans and provide meaningful input

Rationale

- Peer regions have shown that dedicated transit staff within state DOTs and municipal governments has worked to improve coordination and streamline project delivery in places like Boston, New York City, and the Twin Cities. See **Appendix 2** for more information.
- DOT participation is essential to transit infrastructure project implementation in the public right-of-way.

Evaluation

Policy

CATEGORY	RATING	RATIONALE
 MOBILITY	High	Improving coordination and adding capacity will help the region overcome obstacles and get projects delivered successfully.
 EQUITY	High	Better coordination will lead to stronger project outcomes for those who need transit the most.
 ECONOMY	Med	No significant positive or negative impact.
 ENVIRONMENT	Med	No significant positive or negative impact.
 REGIONAL BENEFIT	Regional	Stronger integration of teams and resources would advance bus priority throughout the region.

Process

CATEGORY	RATING	RATIONALE
 ADMINISTRATIVE FEASIBILITY	Med	Staffing and retention at transportation agencies continues to be a challenge.
 POLITICAL FEASIBILITY	High	Agency acceptance would present challenges, particularly if well established processes are upended. However, additional funding for new staffing is a significant incentive for participation.
 TIMING	Near	The State could take almost immediate action to strengthen coordination.
 STATE SPAN OF CONTROL	High	The State's role would be most significant in identifying and allocating funding to bolster capacity, if required. The State could dedicate a new revenue stream through legislation.

Net Cost / Investment

The only cost associated with this recommendation is the additional labor cost for agency staff.

	2025	2026	2027	2028	2029	2030
 Operations & Maintenance	\$1-\$2M	\$1-\$2M	\$1-\$2M	\$1-\$2M	\$1-\$2M	\$1-\$2M
 Capital	N/A	N/A	N/A	N/A	N/A	N/A

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4. Enable automated camera enforcement for bus lanes and stops

To ensure more reliable and faster buses, and to maximize the benefit of transit priority infrastructure, the State of Illinois should consider enabling automated camera enforcement of bus lanes and bus stops. Currently, CTA and Pace do not have the authority to enforce bus lanes or bus stops other than to call the police if a location is obstructed.

Camera enforcement can play a critical role in increasing bus speeds by discouraging illegal parking or blocking of bus-only lanes or bus stops by private automobiles. Vesting this authority regionally would provide transit operators such as Pace or counties the ability (but not the requirement) to handle enforcement across their service areas rather than in a piecemeal fashion.

Agencies should be allowed to use vehicle-mounted cameras for both standing and moving violations in bus lanes and at bus stops. Today, camera enforcement has been authorized in some jurisdictions for parking enforcement (e.g., the City of Chicago's pilot program, discussed above). However, state law does not allow its use for moving violations (e.g., driving in a bus lane).



With state authorization, the City of Chicago, Pace, CTA, and partner entities like county governments could administer a comprehensive automated enforcement system. Fines could progressively increase based on number of violations (similar to New York City's approach). Fine revenue could be dedicated to covering program costs and, if sufficient, capital costs associated with upgrades to bus priority infrastructure that minimize the likelihood of violations.

Legislative actions:

- Enable automated enforcement for moving violations in bus facilities, including by CTA, Pace and/or counties
- Permit use of vehicle-mounted cameras for enforcement
- Direct revenue generated toward program costs and, if incremental revenue is available, toward bus priority infrastructure
- Establish graduated fine structure to address equity concerns

State and local agency actions:

- Expand informational enforcement signage
- Plan for curb space management

Rationale

- Enforcement of bus-only areas such as bus stops and designated bus lanes makes them work better. Enforcement of other traffic rules to reduce double parking and blocking intersections can also prevent delays for buses.
- This enforcement method is highly effective. In New York City, bus corridors with camera-enforced bus-only lanes, along with other improvements, saw between 15-31 percent speed increases depending on the corridor.²⁹ In the first two years of New York’s program, only 16 percent of violations were repeat offenders. See **Appendix 2** for more information.
- The City of Chicago is already piloting camera enforcement for standing violations through the Smart Streets Pilots Ordinance, described in the **Regional context** section.

Evaluation

Policy

CATEGORY	RATING	RATIONALE
 MOBILITY	High	Enables significant mobility improvements to buses, especially for Pace, which operates across a large service area and cannot depend on municipal enforcement alone.
 EQUITY	High	<p>There may be public resistance and equity concerns around potential disproportionate impacts on communities of color and low-income populations, high costs of fines, compounding late fees and debt, and disparate enforcement and/or outcomes.³⁰ Automated camera enforcement and a graduated fine structure may help reduce any bias.</p> <p>These concerns are balanced against the overall context in which buses disproportionately serve low-income individuals and people of color, and thus these communities disproportionately benefit from improvements to bus speed and reliability.</p>
 ECONOMY	Med	Reliable transportation options are critical for both employers and employees. If adopted, these recommendations would improve connections to regional job opportunities, including in areas not well served by rail transit options.
 ENVIRONMENT	High	Discourages idling vehicles and makes transit a more attractive option than a single occupancy vehicle.

²⁹ NYCDOT, New York City Bus Lane Camera Enforcement, 2022.
<https://www.nyc.gov/html/dot/downloads/pdf/bus-lane-camera-report.pdf>

³⁰ For more information, reference: CMAP, Improving equity in transportation fees, fines, and fares: Findings and recommendations for northeastern Illinois, 2021.
https://www.cmap.illinois.gov/documents/10180/1307930/FFF_final_report.pdf/1d74b660-c1c3-a2c0-dcb0-879d4493a499?t=1617741942903

 REGIONAL BENEFIT	Suburban/Urban	Regional benefit largely realized at a localized level. Most benefits may be in more urbanized parts of the region.
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Process

CATEGORY	RATING	RATIONALE
 ADMINISTRATIVE FEASIBILITY	Med	<p>Vehicle-mounted cameras do not require dedicated curb space and can be nimbly deployed.</p> <p>Coordinating equal enforcement across jurisdictions may prove difficult. May lead to some corridor segments where lanes are obstructed with limited recourse or remedy.</p> <p>Likely requires coordination between transit agencies and another unit of government to administer ticketing program.</p>
 POLITICAL FEASIBILITY	Med	Potential lack of political appetite to impose additional fines or fees on already-burdened constituents (“fine fatigue”). This can be counterbalanced by measurable improvements in bus speed and reliability.
 TIMING	Near	Could be implement and administered relatively quickly, especially if enabled for both moving and standing violations. Supports implementation as a near term priority.
 STATE SPAN OF CONTROL	Med	Once authorized by State, largely carried out by transit agencies and other units of government. State can enable but likely would not mandate its use.

Net Cost / Investment

This program would be self-sustaining by design, with no out-of-pocket taxpayer costs.

Category	2025	2026	2027	2028	2029	2030
 Operations & Maintenance	\$0	\$0	\$0	\$0	\$0	\$0
 Capital	Min.	Min.	Min.	Min.	Min.	Min.

5. Enable all-door boarding by authorizing on-board fare verification

One tool to speed bus service is off-board fare payment, which significantly reduces the time it takes for passengers to board when the bus arrives. Off board fare payment also enables all-door boarding of buses, which can further reduce bus stop dwell time and thus speed up service. Off-board fare payment for bus service typically depends on a “proof of payment” approach – rather than paying at the front door of the bus, with visual verification by the bus operator, passengers tap a reader while waiting at the bus stop and are then subject to periodic on-board inspections to verify that they have paid their fare. See **Appendix 3** for more information.



It should be noted that all-door boarding can also be enabled by installing tap readers at the back door of the bus. This is a more scalable solution if there is a desire to implement all-door boarding regionwide, since off-board fare collection is not scalable to the region’s thousands of local bus stops. However, limited implementation of all-door boarding through off-board payment at the busiest stop locations would still achieve much of the travel time benefit at a lower capital cost.

Pace and CTA do not have their own security forces with the ability to issue fines. Both agencies depend on local police for enforcement, which is especially challenging for Pace, which operates in hundreds of separate jurisdictions. To rectify this issue and to enable off-board fare payment, the State should consider enabling Pace and CTA to use non-sworn fare inspectors to issue tickets for fare violations. There may be an opportunity for these individuals to also serve in the role of transit ambassadors (*see companion [memo](#) addressing safety and security*).

This would enable the agencies to enforce their fare policies more effectively without exposing violators to the criminal justice system. Enforcement also ensures that fare revenue is collected so that transit agencies can collect the necessary funds to deliver service.

While this recommendation is tailored to speeding bus service, expanding the transit agencies’ options for enforcing their fare policies would benefit Metra as well and may be a key component in advancing a more complete integration of fare policy and fare collection practices across the three service boards (*see companion [memo](#) on fare integration*).

Legislative actions:

- Grant service boards the authority to enforce fare compliance, including fare evasion, turnstile-jumping, and other “non-tap entries”

- Mandate that fines be set such that the program is revenue neutral: revenue generated by fines covers program costs plus any estimated fare revenue loss associated with transitioning to proof of payment
- Establish graduated fine structure to address equity concerns

State and local agency actions:

- Expand informational enforcement signage

Rationale

- Off-board fare payment can significantly speed service, especially at the busiest bus stops. As one example, a 2016 pilot on Loop Link buses in downtown Chicago resulted in a 50 percent reduction in station dwell time.³¹
- Pace and CTA do not have their own police force or a dedicated security/enforcement team and do not have the ability to write tickets for fare violations. While Metra has its own police force, it is not adequately staffed to carry out this function, and non-sworn fare inspectors may also be preferred from an equity and safety standpoint.
- Fare enforcement is a prerequisite to transitioning to off-board fare collection/proof of payment, and/or all-door boarding on buses.

Evaluation

Policy

CATEGORY	RATING	RATIONALE
 MOBILITY	High	All door boarding and off-board fare payment can significantly speed up bus service, especially at the highest-ridership locations.
 EQUITY	Med	Additional enforcement and introduction of new fines are likely to raise equity concerns. These can be mitigated through graduated fine structures and the use of non-sworn inspectors rather than police.
 ECONOMY	Med	No significant economic impact.
 ENVIRONMENT	High	Shortening dwell times will reduce idling emissions and improve overall efficiency. Faster service will also make transit more appealing, which conforms to the region’s sustainability goals.

³¹ Streetsblog Chicago, “With new all-door boarding pilot, CTA takes a modest step towards modernizing buses,” 2020. <https://chi.streetsblog.org/2020/02/24/with-new-prepaid-boarding-pilot-cta-takes-a-modest-step-towards-modernizing-buses>

 REGIONAL BENEFIT	Regional	Would benefit both the CTA and Pace bus networks, and also has potential benefits for Metra fare integration (<i>see companion memo on fare integration</i>).
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Process

CATEGORY	RATING	RATIONALE
 ADMINISTRATIVE FEASIBILITY	Med	Would require agencies to create a new inspection/enforcement workforce and partner with other agencies for processing and collection of violations.
 POLITICAL FEASIBILITY	Med	The public supports enforcement of fare policies and would favor faster service. Proof of payment often generates a perception that some passengers can ride for free. It may also exacerbate concerns about unhoused individuals using the transit system for shelter. Complementary social services will be important to help address these concerns. (<i>See companion memo on safety and security</i>)
 TIMING	Med	Due to some administrative development, could take a year or two to implement.
 STATE SPAN OF CONTROL	Med	State can enable but unlikely to mandate.

Net Cost / Investment

The operations of this program would be cost-neutral by design: it is recommended that penalties for fare evasion be set at a level that is sufficient to (1) cover the cost of enforcement, and (2) cover any revenue losses associated with fare evasion resulting from transition to a proof of payment model. Thus, the net O&M cost would be zero.

Capital costs would include installation of off-board tap readers and purchase of mobile validators for the purpose of fare inspections, as well as associated design and construction costs. The costs shown below assumes a limited deployment at 100 bus stops, assuming two validators per stop on average and a cost of approximately \$10,000 per validator, plus 100 handheld validators at \$5,000 per unit, and additional engineering and other soft costs.

Category	2025	2026	2027	2028	2029	2030
 Operations & Maintenance	\$0	\$0	\$0	\$0	\$0	\$0

 Capital	\$3M	Min.	Min.	Min.	Min.	Min.
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Appendix 1. Equity Analysis

An equity analysis of the CMAP service area was conducted to understand how equity plays into the region's transit systems, particularly in how bus and rail compare in various equity metrics.

The following metrics were used in this analysis:

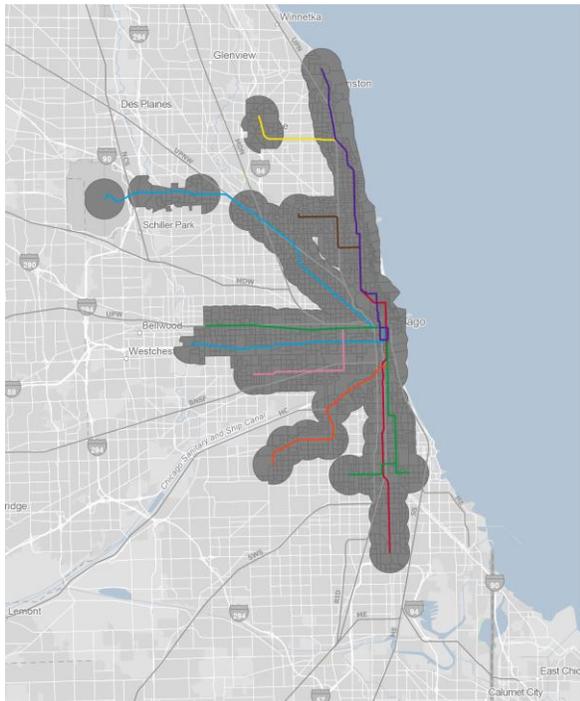
- Population
- Proximity to transit
- Median household income
- Race
- Commute time

This data was gathered from the U.S. Census Bureau's American Community Survey, using results from a block-group geography level. Both ½-mile and 1-mile buffers were considered to define which block groups are "served" by transit. Individual buffers were created for CTA Bus, Pace Bus, CTA Rail, and Metra. Additionally, combined buffers were used to define "Rail" and "Bus" service areas.

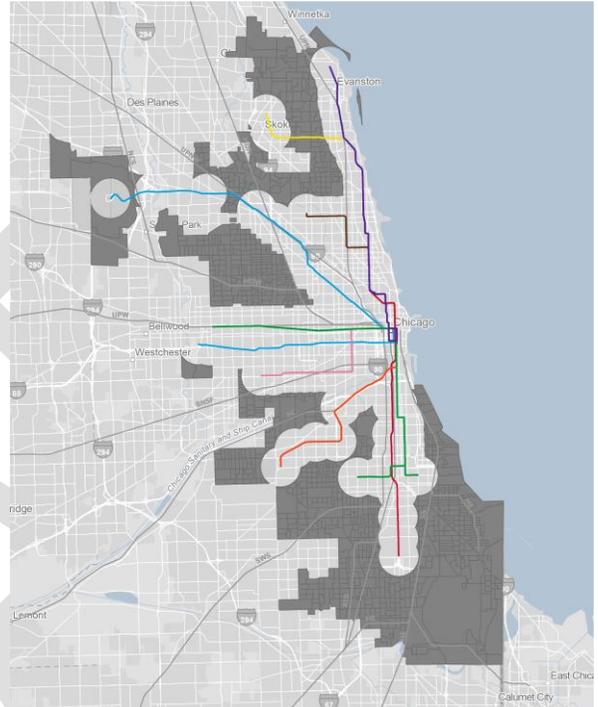
CTA Rail Service Area

The following maps show the two areas that were considered “within 1 mile” and “outside 1 mile” of CTA stations in Chicago and surrounding communities. Communities included in the “outside 1 mile” analysis include those that contain or are within one mile of a CTA station.

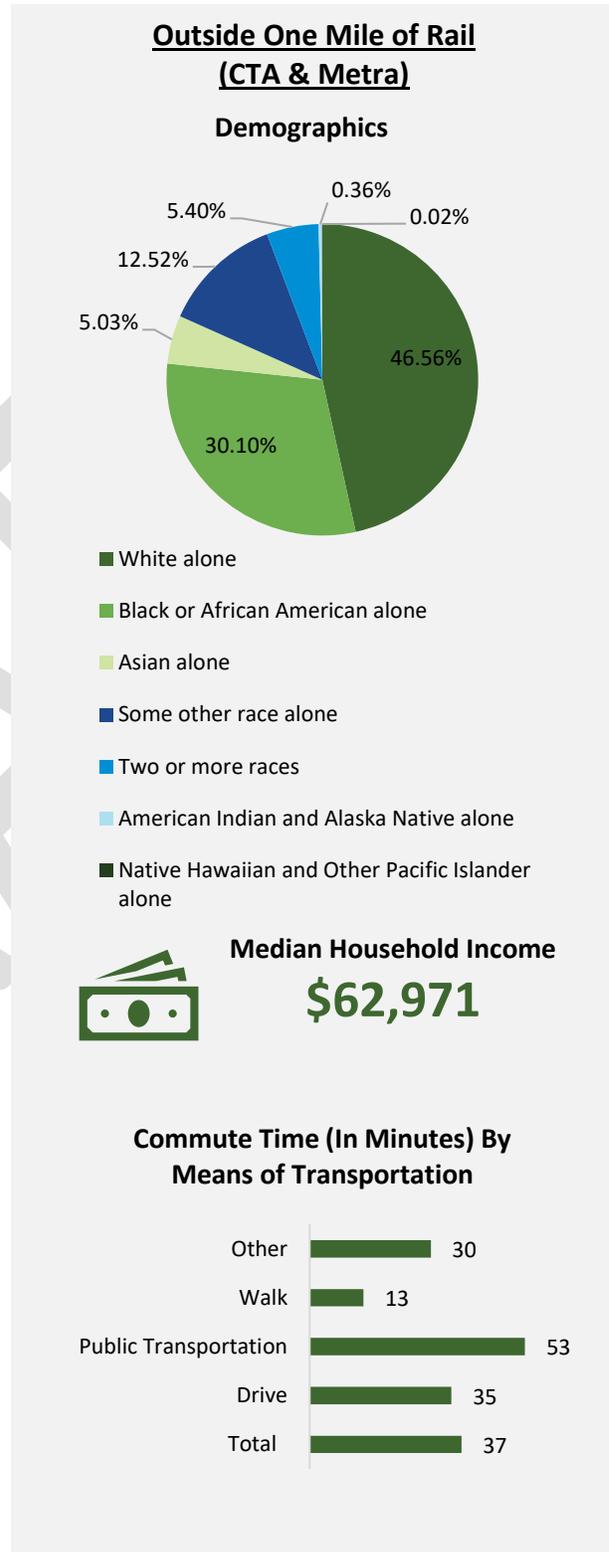
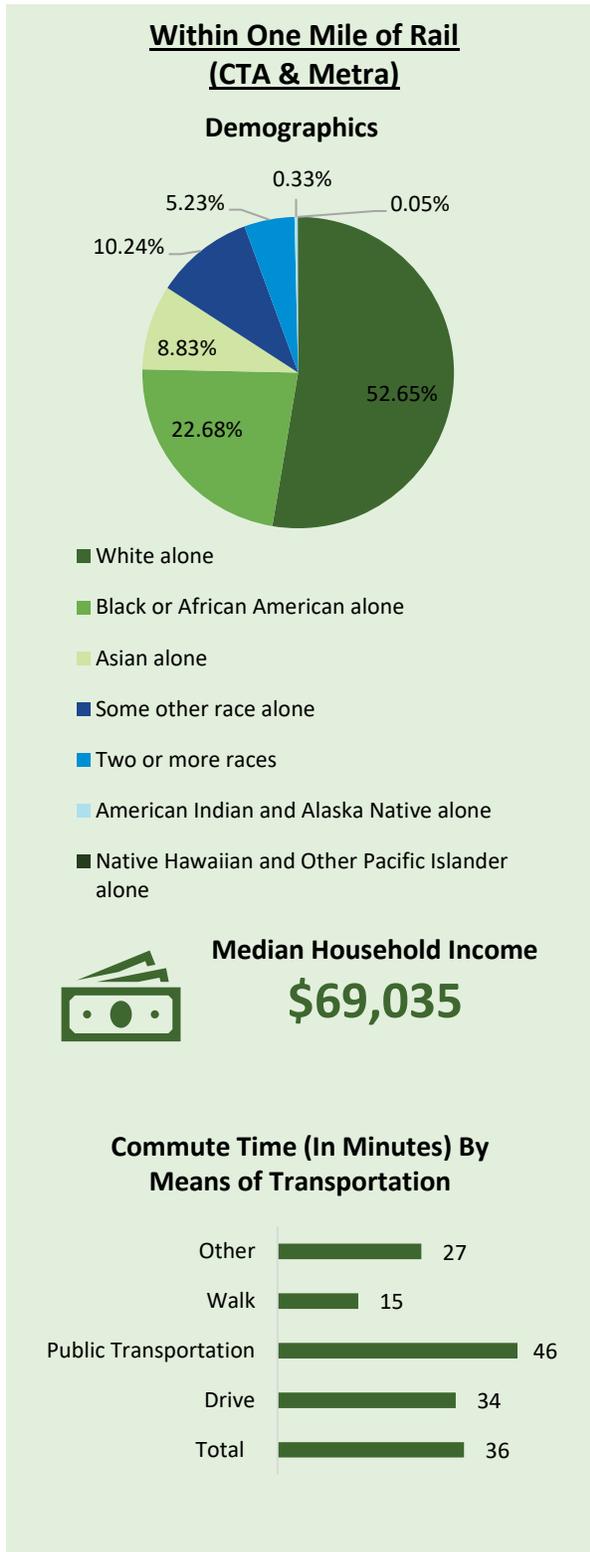
Figure 14: Within One Mile of CTA Rail



Outside One Mile of CTA Rail



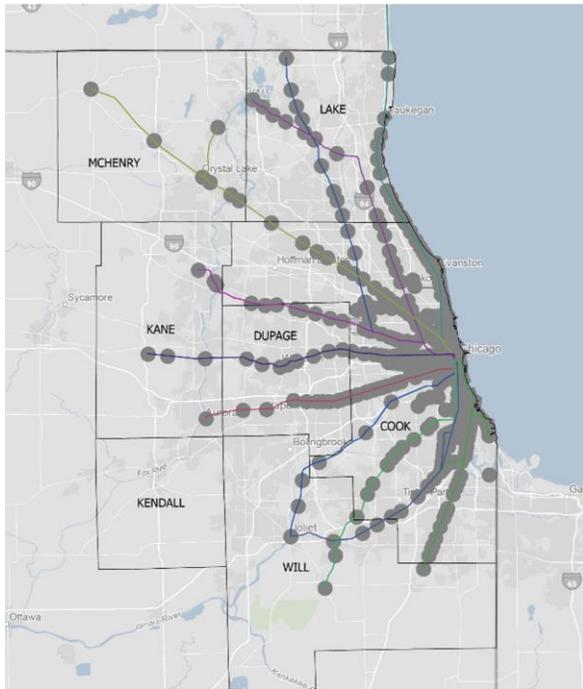
In and near the City of Chicago, those farther from CTA rail have lower incomes and longer commute times, especially when using transit, as shown below.



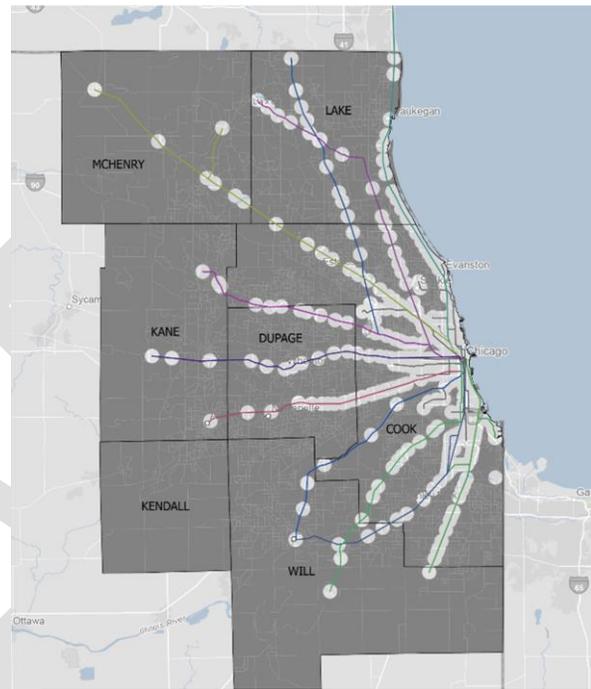
CMAP Region

The following maps show the areas that within one mile and outside one mile of either CTA or Metra rail stations.

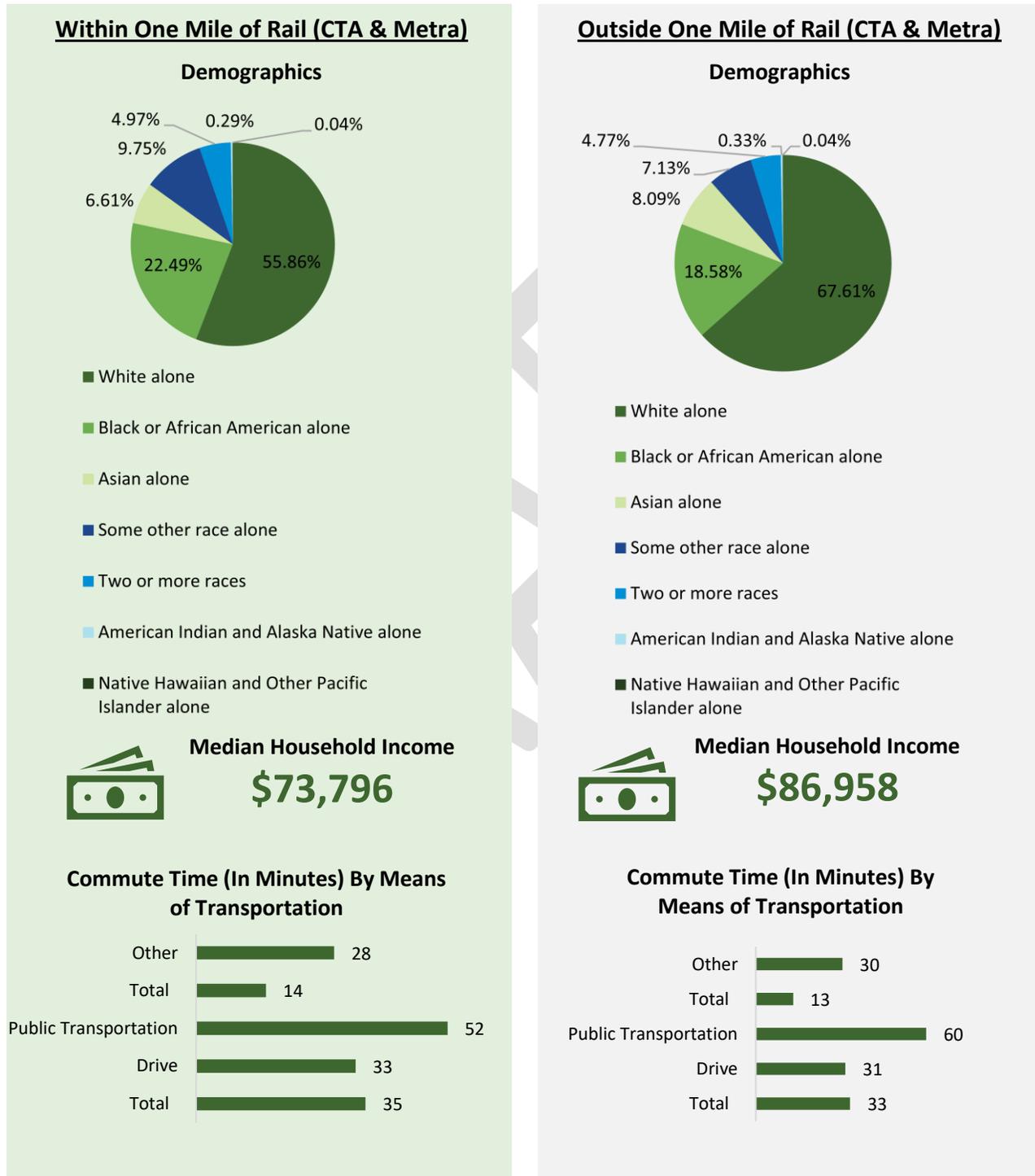
Figure 15: Within One Mile of Rail (CTA & Metra)



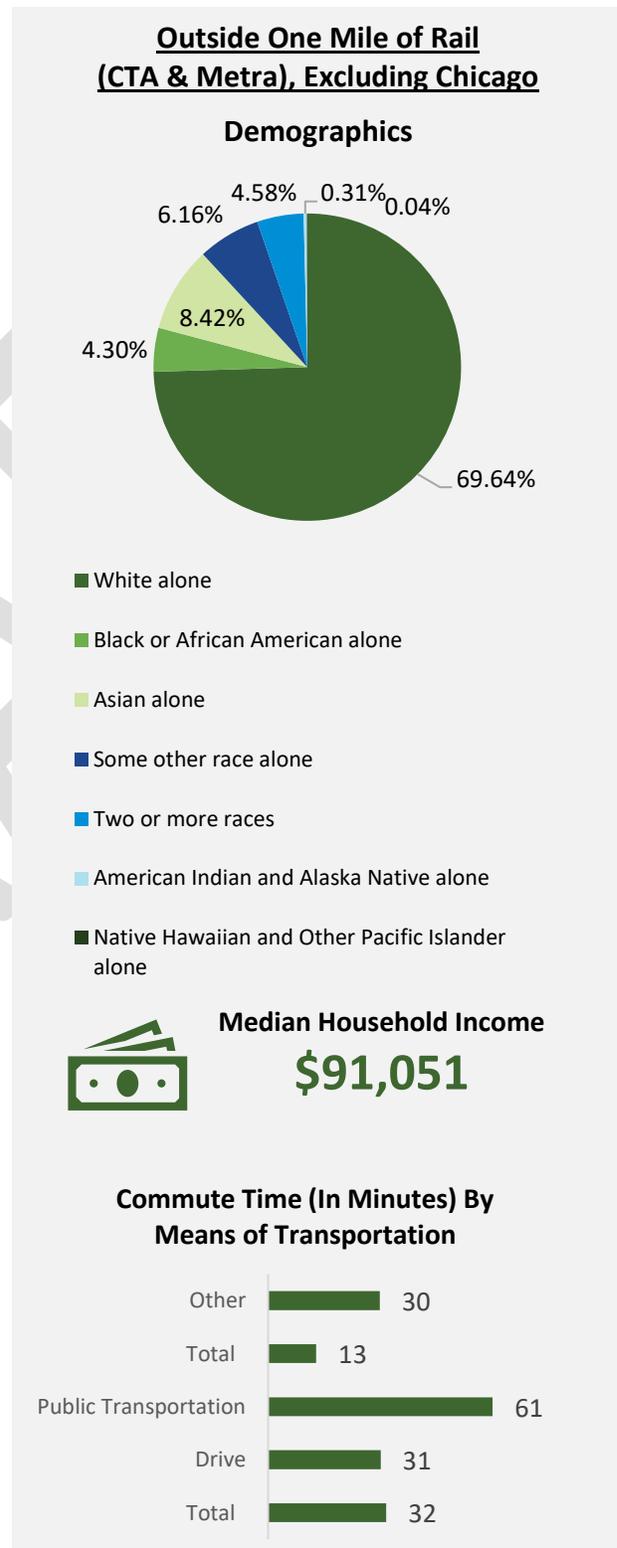
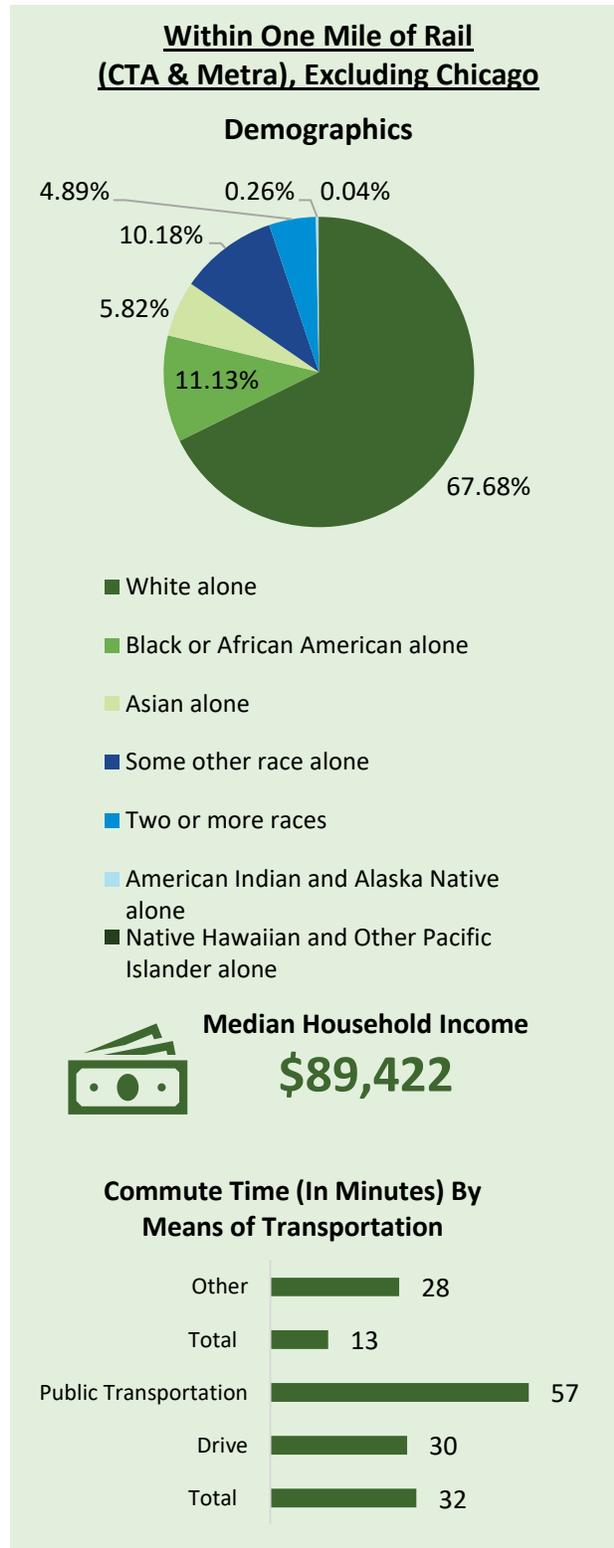
Outside One Mile of Rail (CTA & Metra)



As shown below, across the region, those farther from rail have higher incomes and shorter commute times. This contrasts with CTA-only analysis shown previously. Those who live farther from rail and use public transportation have longer commutes.



The significantly lower average income near rail across the region shown on the previous page is heavily influenced by Chicago, where the majority of the rail service area is located and where incomes are significantly lower than the average for the region (see previous pages). When excluding Chicago, demographics are much more similar regardless of proximity to rail service.



Appendix 2. Case Studies

Boston, Massachusetts

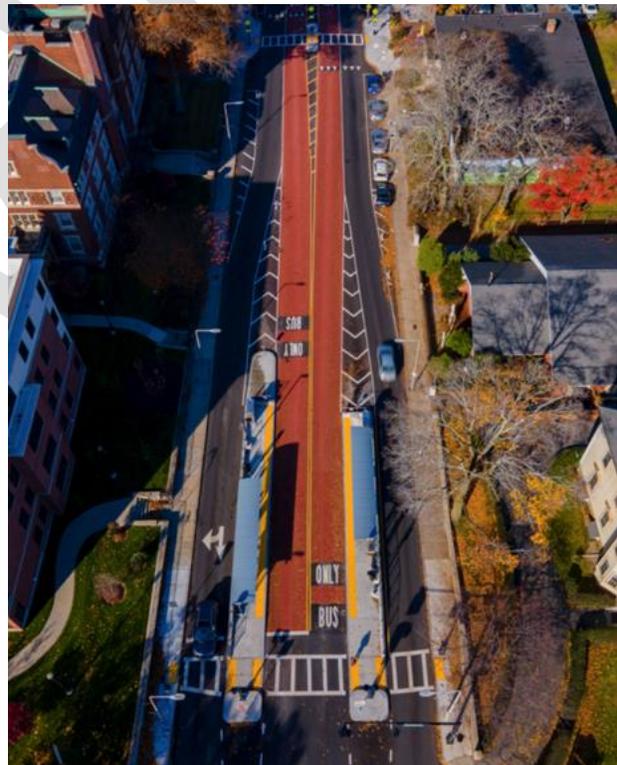
In Boston, public transportation service is provided by the MBTA, a state agency. Like the RTA service boards, MBTA's bus service operates on roadways that the agency does not have jurisdiction over. As recently as ten years ago, the Boston region had very limited bus priority corridors, limited to the Silver Line Washington Street corridor, which was developed in the early 2000s as mitigation for relocation of a heavy rail line.

Early experimentation with adding bus lanes began with city-led projects in Boston's inner suburbs. Everett, a small city just outside of Boston, launched a peak-hour bus lane on Broadway in 2016.³² Initially, the project was implemented as a "pop-up" bus lane consisting of hundreds of traffic cones. Everett's investment resulted in 20-30 percent shorter trip times for the 10,000 people riding buses through the corridor. The project was made permanent in 2020 with the addition of red bus lanes and supporting investments in TSP and stop consolidation.³³

Cities like Cambridge and Boston followed with city-led pilots of their own. In all cases, the cities partnered with MBTA but city involvement was crucial in moving the projects forward. In 2021, Boston opened its (and New England's) first BRT project to operate in a roadway median on Columbus Avenue.³⁴ This project included removal of a lane of traffic for cars in each direction, restricted turning movements, and the addition of TSP.

In a similar example of interagency collaboration, the MBTA recently partnered with the Massachusetts Port Authority (Massport), MassDOT, and the City of Chelsea to extend the Silver Line BRT, which previously terminated at Boston Logan International Airport (owned by Massport) to Chelsea.

Figure 16: Columbus Avenue Dedicated Bus Lanes



³² Streetsblog Massachusetts, Everett Celebrates New Bus Lanes, Mobility Hubs Along Broadway, 2023. <https://mass.streetsblog.org/2020/10/27/everett-celebrates-new-bus-lanes-mobility-hubs-along-broadway-corridor/>

³³ TransitCenter, Everett Bus Lane: The Little Pop-Up That Could, 2018. <https://transitcenter.org/everett-bus-lane-the-little-pop-up-that-could/>

³⁴ BostonBRT, Latest BostonBRT Updates, Accessed 2023. <http://www.bostonbrt.org/updates>

New York City, New York

Most streets in New York City are under the jurisdiction of NYCDOT, while the city's transit system is operated by MTA, a state agency. New York City's SBS program³⁵ began around 2008 as an NYCDOT-led program to improve the speed and reliability of MTA buses operating in some of the city's busiest transit corridors. SBS includes the addition of bus-only lanes, off-board fare payment, signal priority, and camera enforcement of bus-only lane violations. NYCDOT led the installation of these features in close coordination with MTA to both identify the corridors and design the improvements.



A key component of this multi-agency partnership is camera enforcement via fixed and on-bus cameras to identify and ticket bus lane violators. Cameras on MTA buses transmit information to NYCDOT, which administers the ticketing program. In addition, the New York Police Department (NYPD) has initiated the deployment of seven tow truck teams to enforce bus lanes citywide.³⁶ Bus-only lane violation fines are progressive based on the number of violations a given vehicle owners has.³⁷ Camera enforcement, along with other bus improvements, has increased bus speeds by 15 to 31 percent depending on the corridor.³⁸

NYCDOT has now expanded its toolbox through its recent Better Buses Program, which aims to bring SBS-type improvements to corridors throughout the city, including the proposed addition of 300 new TSP intersections per year. As with SBS, these improvements are spearheaded by NYCDOT in close coordination with MTA to identify where improvements are most needed and to collaborate on design and implementation.

³⁵ NYCDOT, Select Bus Service Features, Accessed 2023. <https://www.nyc.gov/html/brt/html/about/sbs-features.shtml>

³⁶ NYCDOT, Better Buses Action Plan, 2019. <https://www.nyc.gov/html/brt/downloads/pdf/better-buses-action-plan-2019.pdf>

³⁷ MTA, MTA to Install ABLE Cameras on 300 Additional Buses Across Nine Routes by End of 2022, 2022. <https://new.mta.info/press-release/mta-install-able-cameras-300-additional-buses-across-nine-routes-end-of-2022>

³⁸ NYCDOT, New York City Bus Lane Camera Enforcement, 2022. <https://www.nyc.gov/html/dot/downloads/pdf/bus-lane-camera-report.pdf>

Twin Cities, Minnesota

The Twin Cities' primary transit operator, Metro Transit, is a division of Metropolitan Council, a state agency that coordinates regional planning in the Twin Cities region and serves as the region's federally designated metropolitan planning organization (MPO).

In the Twin Cities, transit project implementation occurs in a highly collaborative interagency environment in which Metro Transit, city/county governments, and MnDOT are all partners, with each agency having a clearly defined role. Typically, transit corridor planning is initiated by county or city governments, which develop a proposed transit project at a conceptual level in close coordination with MnDOT and Metro Transit. Once

sufficiently developed to enter the environmental process and final design, Metro Transit becomes the lead agency, though the local share of project capital funding typically still comes from the county or city government. MnDOT's participation in this process is facilitated by a dedicated transit office within MnDOT, whose staff collaborate with Metro Transit and the local governments when transit projects are proposed to be constructed on a MnDOT-owned roadway. When projects advance into final design and construction, Metro Transit establishes a dedicated project office and MnDOT transit staff work directly in that office to facilitate close coordination throughout the project life cycle.

This partnership approach has proven successful in planning and delivering bus priority projects throughout the region. Metro Transit opened its first arterial BRT corridor, the A Line, in 2016, with two additional arterial BRT corridors having opened since then and a fourth under construction. The Gold Line, the region's first BRT to operate in its own guideway, broke ground in 2023. The Orange Line, an expressway-based BRT that includes stations in the median of MnDOT-owned I-35W, opened in 2021. Additional corridors are being developed throughout the region.

The unique governance structure of the Metropolitan Council and Metro Transit means that the approach to project delivery is not directly applicable to the Chicago region. However, the early and proactive collaboration that occurs between agencies, and the state DOT's active participation from early in the planning process, is a successful model that can be applied to this region.

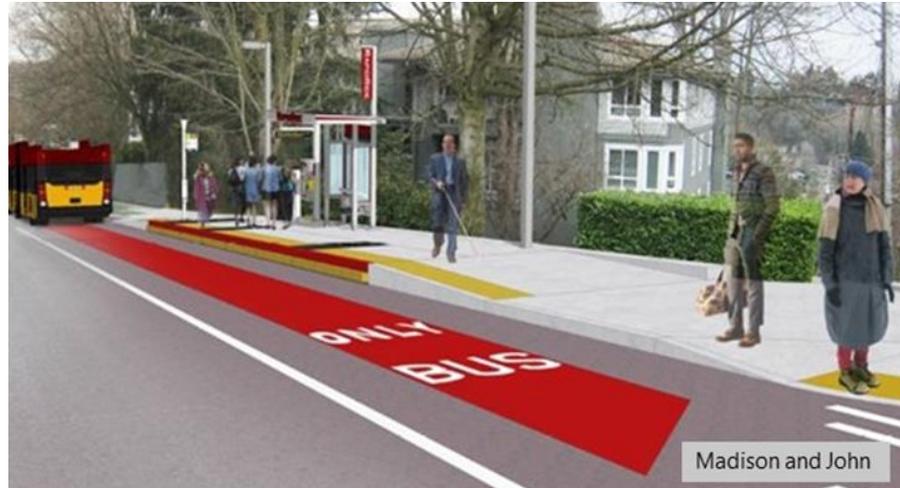
Figure 18: The A Line, the Twin Cities' First Arterial BRT



Seattle, Washington

The 76-mile RapidRide network brings rapid transit features to bus corridors throughout King County, home to the City of Seattle.³⁹ RapidRide is one of the main elements presented in King County's "Transit Now" initiative, a program approved by voters in November of 2006. RapidRide receives 60 percent of its operating funding from sales

Figure 19: Rendering of Madison and John Street showing a bus-only lane, level-boarding, station shelter, and real time arrival information



taxes, and has mainly been able to continue development of RapidRide via successful procurement of federal and state grants, of which it has received a total of \$82 million.⁴⁰ This has led to a number of improved facilities and redesigned streets nearby the bus stops, a rendering of which can be seen in **Figure 19**.⁴¹ Typically, RapidRide lines provide improved connections and more frequent and reliable service. RapidRide uses a proof-of-payment system, allowing passengers with a valid transfer or an ORCA Card to enter through any of the three doors on the bus. Passengers without either an ORCA Card or a valid transfer would have to enter through the front door, where they can pay their fare and receive a transfer. RapidRide improves the quality of life for residents through increasing accessibility, improving service, and decreasing the number of cars on the road, creating a high-quality experience for each rider.⁴²

³⁹ King County Executive, King County posts record transit ridership in year of bus and train expansion, 2017. <https://kingcounty.gov/elected/executive/constantine/news/release/2017/February/21-transit-record.aspx>

⁴⁰ King County DOT, Transit Now, 2017.

<https://kingcounty.gov/transportation/kcdot/MetroTransit/TransitNow.aspx>

⁴¹ Curbed Seattle, RapidRide G Line coming to Madison Street in 2019, 2017.

<https://seattle.curbed.com/2017/3/10/14876730/rapidride-g-line-madison-brt-stop-design>

⁴² King County Metro, RapidRide, 2022. <https://kingcounty.gov/depts/transportation/metro/travel-options/bus/rapidride.aspx>

Appendix 3. Toolbox

Dedicated bus lanes

Dedicated bus lanes are typically applied on major routes with frequent headways, or where traffic congestion may significantly affect reliability. Bus lanes will significantly reduce delays due to traffic congestion and raise the visibility of high-quality service.

Figure 20: Dedicated Bus Lanes (NACTO)⁴³



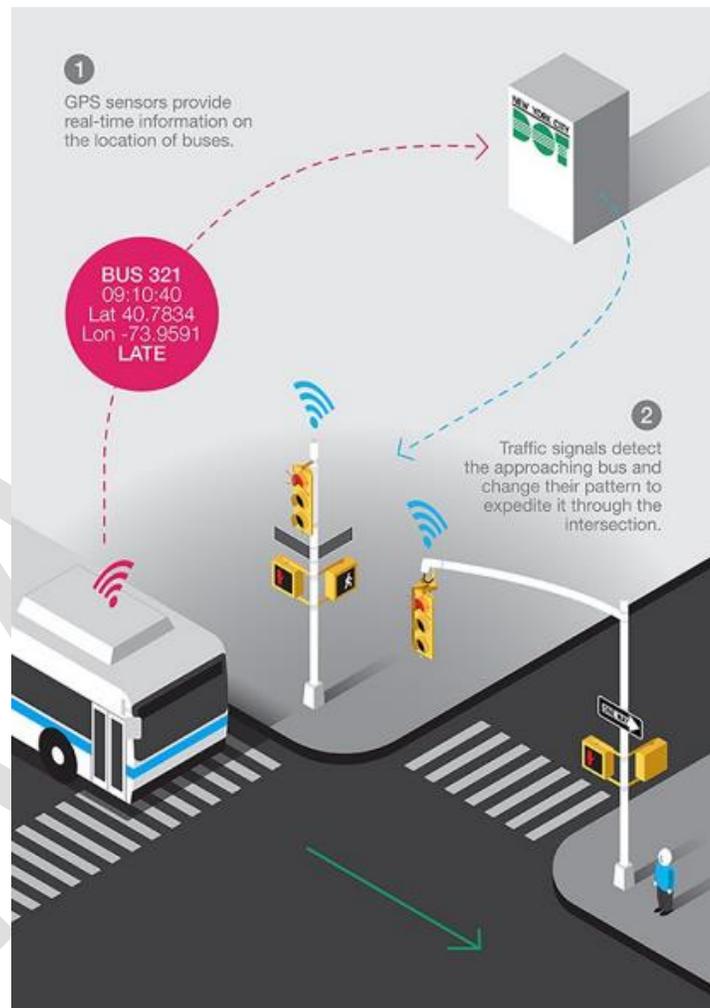
⁴³ NACTO, Dedicated Curbside/Offset Bus Lanes, Accessed 2023. <https://nacto.org/publication/urban-street-design-guide/street-design-elements/transit-streets/dedicated-curbside-offset-bus-lanes/>

Transit signal priority

Transit signal priority (TSP) modifies traffic signal timing or phasing when transit vehicles are present. **Figure 21**⁴⁴ shows how TSP work through communications between buses and traffic signals. TSP can significantly improve the reliability of transit vehicles and travel time. Cities like Minneapolis, Los Angeles, and Seattle use TSP to help reduce the total bus trip times during their peak hours. Seattle and Los Angeles reduced their travel time by 8-10 percent, while Minneapolis reduced theirs by 4-15 percent. TSP benefits are significantly amplified when implemented alongside other strategies, such as dedicated transit lanes. TSP also requires high coordination between agencies.⁴⁵

The Chicago region has been pursuing TSP as a regional partnership between CTA, Pace, RTA, CDOT, and IDOT. It has been successfully implemented in several corridors, with additional planned corridors still under development and seeking additional funding.⁴⁶

Figure 21: How TSP Works



⁴⁴ NYC Office of Technology & Innovation, Building a Smart + Equitable City, 2015.

<https://www.nyc.gov/assets/forward/documents/NYC-Smart-Equitable-City-Final.pdf>

⁴⁵ NACTO, Active Transit Signal Priority, 2016. <https://nacto.org/publication/transit-street-design-guide/intersections/signals-operations/active-transit-signal-priority/>

⁴⁶ RTAMS, Regional Transit Signal Priority (TSP) Implementation Program, Accessed 2023.

<https://rtams.org/regional-transit-signal-priority-tsp-implementation-program>

Queue Jumps

Queue jumps are a combination of short bus lanes with either a leading bus interval or active signal priority.⁴⁷ These lanes give buses a head start, improving their performance through congested intersections. Queue jumps reduces delays and increases transit reliability, resulting in travel time savings.

Figure 23: Queue Jumping (Pace)

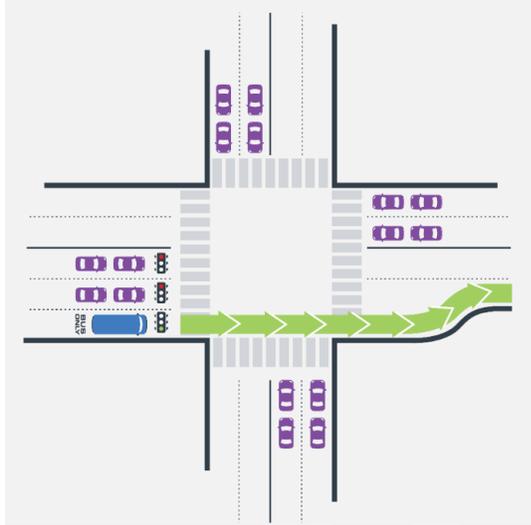
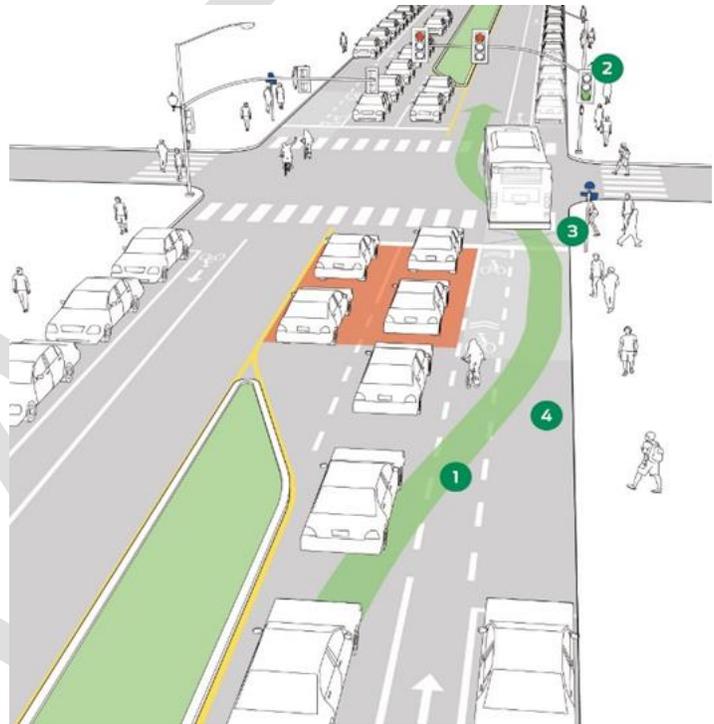


Figure 22: Queue Jumping (NACTO)



⁴⁷ NACTO, Queue Jump Lanes, Accessed 2023. <https://nacto.org/publication/transit-street-design-guide/intersections/intersection-design/queue-jump-lanes/>

Bus bulbs

Bus bulbs are curb extensions that align the bus stop with the parking lane. This allows buses to stop and board passengers without leaving the travel lane, enabling buses to coexist with fewer conflict points. Bus bulbs are a common strategy in urban settings, including some located in Chicago.⁴⁸

Figure 24: Floating bus stops on Jackson Blvd, Columbus Park



Figure 25: Bus Bulbs (NACTO)⁴⁹



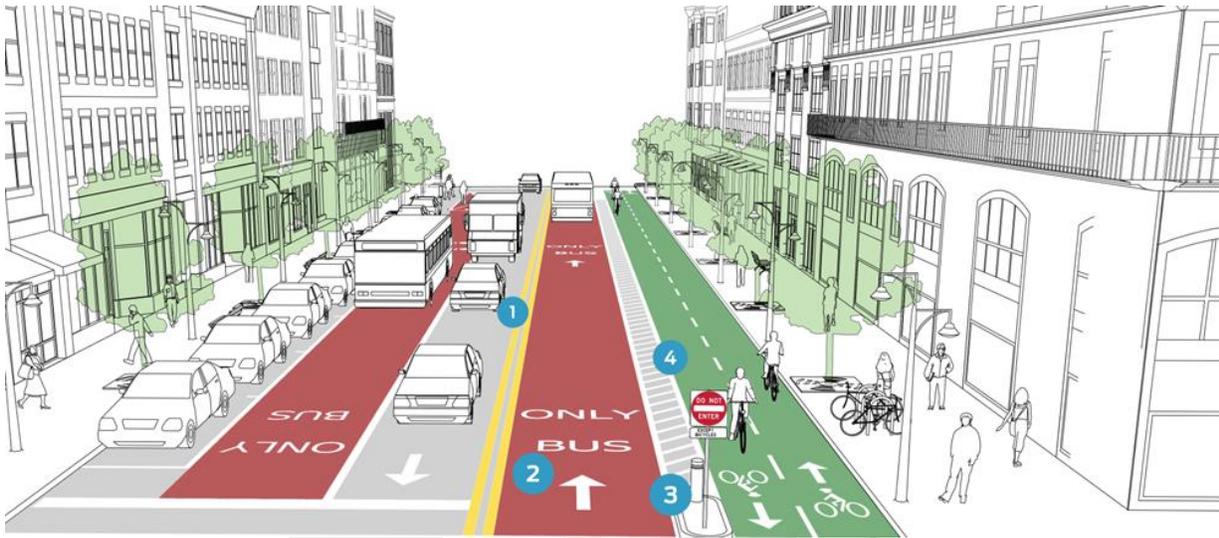
⁴⁸ Google Street View. Accessed June 2023.

⁴⁹ NACTO, Bus Bulbs, Accessed 2023. <https://nacto.org/publication/urban-street-design-guide/street-design-elements/curb-extensions/bus-bulbs/>

Reversible / Contraflow Lanes

Contraflow lanes enable more direct routes to transit connections with high transfer volumes, while reversible lanes are more common to see on highways for peak-direction flow.

Figure 26: Contraflow lanes (NACTO)⁵⁰



Bus-on-shoulder

Bus-on-shoulder is a low-cost strategy used to create a dedicated bus lane on highways.

Figure 27: Pace bus-on-shoulder⁵¹



⁵⁰ NACTO, Contraflow Transit Lane, Accessed 2023. <https://nacto.org/publication/transit-street-design-guide/transit-lanes-transitways/transit-lanes/contraflow-transit-lane/>

⁵¹ Mass Transit, Pace celebrates 10th anniversary of bus on shoulder, 2021. <https://www.masstransitmag.com/bus/press-release/21247239/pace-suburban-bus-pace-celebrates-10th-anniversary-of-bus-on-shoulder>

Off-board fare payment and all-door-boarding

Off-board fare payment requires fare collection technology and equipment at bus station platforms. Riders pre-pay their fare before boarding the bus. To enforce payment, transit agencies must be able to conduct periodic inspections on-board in transit and issue fines to riders who have not paid. Bus stations can also have enclosed platforms or secure boarding areas, much like rail stations, though with proof of payment enforcement this is not necessary. Pre-payment of fares at stations means that riders can board buses at any door, no longer restricted to front-door only boarding where they would pay the fare as they board. Together, off-board fare payment and all-door boarding reduce dwell time at stations and improve bus trip speeds. Systemwide dwell times in San Francisco decreased 38 percent and ridership and bus speeds increased by 2 percent following implementation of all door boarding. New York City saw an 11 percent decrease in dwell times despite a 7 percent increase in ridership on one bus route with all door boarding. An off-board fare collection pilot on Loop Link in Chicago resulted in a 50 percent reduction in dwell time.⁵² All-door boarding can also be implemented without off-board fare payment if Ventra card validators are installed at the rear doors of the buses.

Camera enforcement

Camera enforcement of bus-only and bus stops lanes discourages drivers from illegally parking or blocking the bus, which slows down service, especially when dedicated bus-only lanes are obstructed, which buses should be able to use free of obstructions or congestion to improve speeds and trip times.

Congestion and road pricing

Some potential revenue sources, such as congestion or road pricing, also have added transportation benefits. Congestion pricing can reduce vehicle traffic through induced mode shifts, improving travel times for buses in mixed traffic. Bus riders in London, England saw a 30 percent decrease in waiting time at stations in congestion pricing zones in the first year of implementation. Stockholm, Sweden saw a 14 percent reduction in VMT in its congestion pricing zone.

For more details, see the related PART [memo](#) on potential transit funding solutions from the road system.

⁵² Streetsblog Chicago, “With new all-door boarding pilot, CTA takes a modest step towards modernizing buses,” 2020. <https://chi.streetsblog.org/2020/02/24/with-new-prepaid-boarding-pilot-cta-takes-a-modest-step-towards-modernizing-buses/>



NEW BERN BRT, RALEIGH, NC

- \$18M per mile
- Mix of dedicated lanes and mixed traffic

MIXED TRAFFIC PROJECTS: COST AND ELEMENTS ⁵⁵ ⁵⁶



DIVISION TRANSIT PROJECT, PORTLAND, OR

- \$13M per mile
- Mixed traffic
- TSP
- Large stations with bus bulbs
- Bike lane improvements



PROSPECT MAX, KANSAS CITY, MO

- \$6M per mile
- Mixed traffic
- TSP
- Level boarding
- Passenger info kiosks



LAKE LINE, GRAND RAPIDS, MI

- \$1.5M per mile
- Mixed traffic
- TSP
- Level boarding

⁵⁵ Cost and project information sourced from FTA

⁵⁶ Image sources: <https://trimet.org/division/openhouse/2017summer.htm>; Frank Morris / KCUR 89.3, <https://www.kcur.org/podcast/up-to-date/2020-12-16/kcata-makes-bus-transit-easier-for-the-blind-with-new-app>; <https://www.jranck.com/project/laker-line-expansion-grand-rapids-michigan/>; Tom Robb/Journal photo, <https://www.journal-topics.com/articles/pace-plans-new-shelters-for-dempster-pulse-stops/>



PULSE DEMPSTER LINE, CHICAGO, IL

- \$1.5M per mile
- Mixed traffic
- TSP
- Level boarding

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